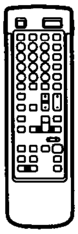
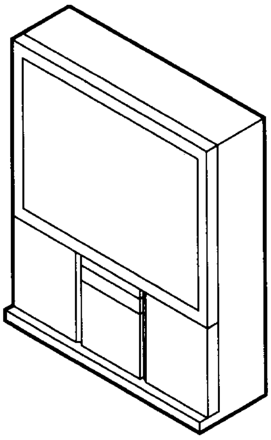
# SERVICE MANUAL

# RX-1E CHASSIS

| MODEL | COMMANDER | DEST. | CHASSIS NO. |
|---|---|---|---|
| KP-46S4 | RM-831 | AEP | SCC-N24A-A |
| KP-46S4K | RM-831 | OIRT | SCC-N25A-A |
| KP-46S4U | RM-831 | UK | SCC-N26A-A |
| KP-53S4 | RM-831 | AEP | SCC-N24B-A |
| KP-53S4K | RM-831 | OIRT | SCC-N25B-A |
| KP-53S4U | RM-831 | UK | SCC-N26B-A |



RM-831



KP-46S4/46S4K/46S4U
KP-53S4/53S4K/53S4U

MICROFILM

## PROJECTION TV

**SONY**®

※ Please file according to model size. .................... ▩

▩ 46 ☐ 53

# SPECIFICATIONS

| | |
|---|---|
| Television system | B/G/H,D/K,I,L |
| Colour system | PAL/SECAM and NTSC 3.58/NTSC4.43 (VIDEO IN) |
| Channel coverage | See " Receivable channels and channel displays " at the bottom. |
| Projected picture size | 116cm (46 inches) |
| Terminals | 133cm (53 inches) |
| Rear | Center speaker input terminals,<br>2 terminals<br>(L,R), audio outputs - phono jacks (variable)<br>1, 21-pin Euro connector (CENELEC standard)<br>-inputs for audio and video signals<br>- inputs for RGB<br>- outputs of TV audio and video signals<br>2/ 2, 21-pin Euro connector<br>- inputs for audio and video signals<br>- inputs for S Video<br>- outputs for audio and video signals (selectable)<br>2, S video inputs - 4 pin DIN<br>(L,R), audio inputs - phono jacks<br>4/ 4, 21-pin Euro connector<br>- inputs for audio and video signals<br>- inputs for S video<br>- outputs for audio and video signals (monitor out)<br>4, S video inputs - 4 pin DIN<br>(L, R), audio inputs - phono jacks<br>S video outputs 4-pin DIN (monitor out)<br>(L, R), audio outputs - phono jacks (fixed) |
| Front | 3, video input-phono jack<br>(L, R), audio inputs-phono jacks<br>3, S video input-4-pin DIN<br>, headphone jack - stereo minijack |
| Sound output | 2 x 30W (music power)<br>2 x 15W (RMS) |
| Power consumption | 225W |
| Dimensions(WxHxD) | KP-46S4K : 1104 x 1267 x 512 mm<br>KP-53S4K : 1164 x 1335 x 650 mm |
| Weight | KP-46S4K : 79kg<br>KP-53S4K : 90kg |
| Supplied accessories | RM-831 Remote Commander<br>One IEC designation R6 battery |
| Other features | Digital comb filter (High resolution)<br>PIP (Picture-in-picture)<br>FASTEXT<br>NICAM (B/G, L, I)<br>B/G STEREO<br>D/K STEREO |

Design and specifications are subject to change without notice.

### Receivable Channels and Screen Displays

| | Receivable channels | Indication on the screen |
|---|---|---|
| PAL B/G/H | E2..12 21..69 | C02 C03 C04..C12 C21..C69 |
| CABLE TV (1) | S1..41 | S01 S02..S41 |
| CABLE TV (2) | S01..S05 M1..M10 U1..U10 | S42..S46 S01..S10 S11..S20 |
| ITALIA | A B C D E F G H H1 H2 21..69 | C11..C69 |
| SECAM D/K | R01..R12 R21..R60 | C02..C12 C21..C60 |
| SECAM L | F2..F10 F21..F69 | C01..C12 C21..C69 |
| PAL I | B21.. B68 | C21..C68 |

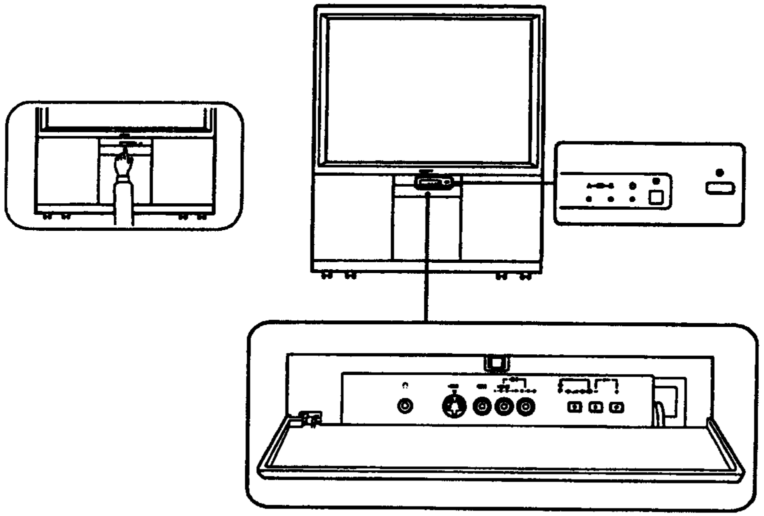
# SECTION 1
# GENERAL

The operation instruction mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

## Overview

This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

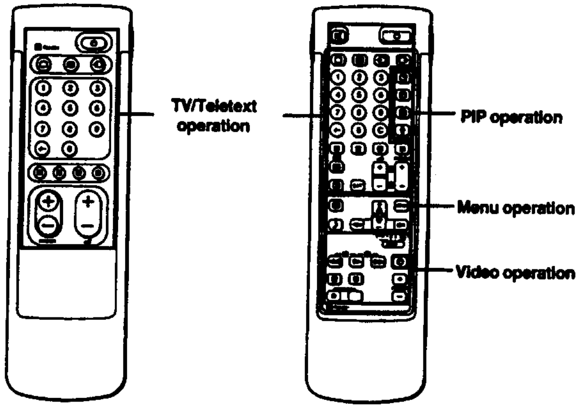
### TV set-front



| Symbol | Name | Refer to page |
|---|---|---|
| ⦶ | Main power switch | 7, 13 |
| ⏻ | Standby indicator | 13 |
| A-ꝏ-B | Stereo A/B indicators | 15 |
| Ω | Headphones jack | 22 |
| -⊕ 3, -⊙ 3, -⊙ 3 | Input jacks (S video/video/audio) | 22 |
| P–◿–⊙ | Function selector (Programme/volume/input) | 14 |
| –/+ | Adjustment buttons for function selector | 14 |

### Remote commander RM-831

Note
The SAT button does not operate with this TV.



Simple side

Full-Function side

### TV/Teletext operation

| Symbol | Name | Refer to page |
|---|---|---|
| 🔇 | Mute on/off button | 14 |
| ⏻ | Standby button | 13 |
| ▭ | TV power on/TV mode selector button | 13 |
| ⊜ | Teletext button | 14 |
| -⊙ | Input mode selector | 14 |
| ⊙- | Output mode selector | 23 |
| 1,2,3,4,5,6, 7,8,9,and 0 | Number buttons | 13 |
| -/-- | Double-digit entering button | 13 |
| C | Direct channel entering button | 10 |
| ◿+/– | Volume control button | 13 |
| PROGR +/– | Programme selectors | 13 |
| ⊟⊟ | Teletext page access buttons | 19 |
| ● | Picture adjustment button | 15 |
| ♪ | Sound adjustment button | 15 |
| ⊡ | On-screen display button | 14 |
| ⊜ | Teletext hold button | 19 |
| ⊘ | Time display button | 14 |
| ■■■■ | Fastext buttons | 19 |

### PIP (Picture-in-picture) operation

| Symbol | Name | Refer to page |
|---|---|---|
| ◔ | PIP on/off button | 17 |
| ↑ | PIP source selector | 17 |
| ⊘ | Swap button | 17 |
| ⊕ | PIP position changing button | 17 |

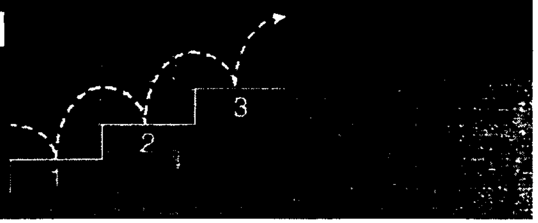
### Menu operation

| Symbol | Name | Refer to page |
|---|---|---|
| MENU | Menu on/off button | 7 |
| △+/ ▽– | Select buttons | 7 |
| OK | OK(confirming)button | 7 |
| ← | Back button | 7 |

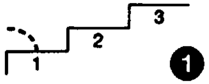
### Video operation

| Symbol | Name | Refer to page |
|---|---|---|
| VTR1/2/3, MDP | Video equipment selector | 24 |
| ◀◀ ▶ ▶▶ ■<br>❚❚ ● ⏻<br>PROGR +/– | Video equipment operation buttons | 24 |

# Getting Started



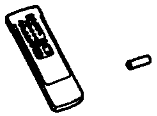
## Step 1 Preparation



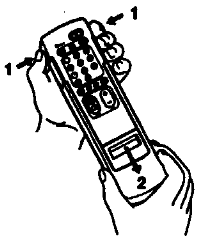
### ❶ Check the supplied accessories

When you've taken everything out of the carton, check that you have these items:

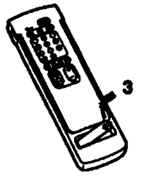
- RM-831 Remote Commander
- One IEC designation R6 battery



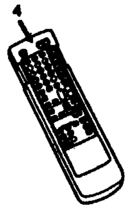
### ❷ Insert the battery into the Remote Commander



Remove the cover.



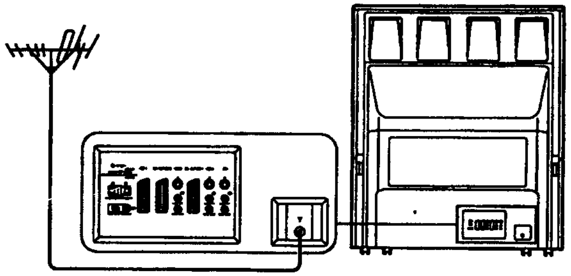
Check the correct polarities.



Refit the outside cover making sure that the Full-Function side is visible to use the menu in step 2.

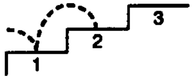
Note: Always remember to dispose of used batteries in an environmental friendly way.

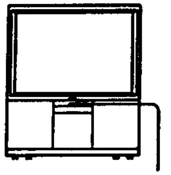
### ❸ Connect the aerial



Fit an IEC aerial connector attached to 75-ohm coaxial cable (not supplied) to the ⫪ socket at the rear of the TV.

## Step 2 Adjusting Colour Registration (CONVERGENCE)

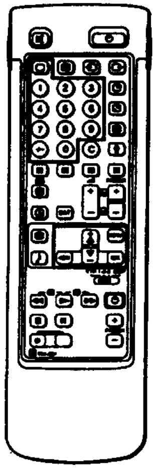




Once you have set up the TV, you can choose the language of the menu. Then you should converge the three colour layers (red, green, and blue).

**Before you begin**

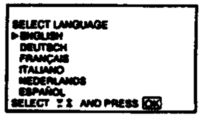
- Check that the Full-Function side of the Remote Commander is visible.
- Locate Menu operation buttons on the Remote Commander. They are shaded in the illustration at the left.



### ❶ Choose a language

1. Depress ① (main power switch) on the TV unit.
   The TV will switch on. If the standby indicator on the TV is lit, press ○ or a number button on the Remote Commander.
2. Press MENU.
   The LANGUAGE menu appears. (See Fig. 1).
3. Select the language you want with △ + or ▽ – and press OK.
4. Press ⇐ to return to the main menu.

△+ ▽– OK



```
SELECT LANGUAGE
▶ENGLISH
 DEUTSCH
 FRANÇAIS
 ITALIANO
 NEDERLANDS
 ESPAÑOL
SELECT ▽△ AND PRESS OK
```

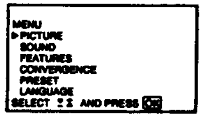
Fig. 1

### ❷ Display the menu

Press MENU.

The main menu appears. (See Fig.2)

MENU



```
MENU
▶PICTURE
 SOUND
 FEATURES
 CONVERGENCE
 PRESET
 LANGUAGE
SELECT ▽△ AND PRESS OK
```

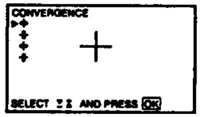
Fig. 2

### ❸ Converge the red, green and blue lines

1. Select "CONVERGENCE" with △ + or ▽ – and press OK.
   The CONVERGENCE menu appears. (See Fig. 3.)
2. Select "the line" you want to adjust with △+ or ▽–.
   Key to line adjustment symbols:
   I (red vertical – left/right adjustment)
   – (red horizontal – up/down adjustment)
   I (blue vertical – left/right adjustment)
   – (blue horizontal – up/down adjustment)
3. Press OK.
   The line to adjust is selected.
4. Press △+ or ▽– to converge the selected line with the centre green line and press OK.

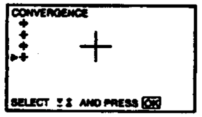
| | |
|---|---|
| To move up (horizontal line)<br>To move right (vertical line) | Press △+ |
| To move down (horizontal line)<br>To move left (vertical line) | Press ▽– |

5. Repeat steps 2 to 4 to adjust the other lines, until all the lines have overlapped to form a white cross. (See Fig. 4.)
6. Press MENU to return to TV picture.



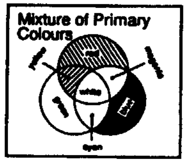
```
CONVERGENCE
▶+
 +
 +
 +
SELECT ▽△ AND PRESS OK
```

Fig. 3

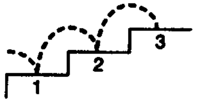


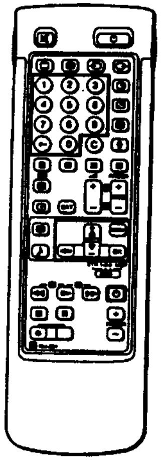
```
CONVERGENCE
 +
 +
 +
▶+
SELECT ▽△ AND PRESS OK
```

Fig. 4



# Step 3 Tuning in to TV Stations



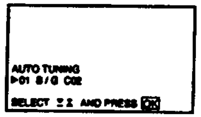


**To go back to the main menu**
Keep pressing ⇐ .

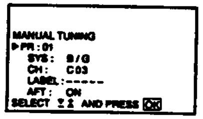
**To stop automatic channel presetting**
Press ⇐ on the Remote Commander.

**Notes**
- After presetting the channels automatically, you can check which channels are stored on which programme positions.
- You can exchange the programme positions to have them appear on screen in the order you like. For details, see "Exchanging the Programme Positions" on page 10.

You can preset the channels (up to 100 channels) by choosing either the automatic or manual method.
The automatic method is easier if you want to preset all receivable channels at once. Use the manual method if you only have a few channels and want to preset channels one by one.



AUTO TUNING
▶01 B/G C02
SELECT ▽△ AND PRESS OK



MANUAL TUNING
▶PR : 01
SYS : B/G
CH : C03
LABEL : ------
AFT : ON
SELECT ▽△ AND PRESS OK

## Preset Channels Automatically

1 Press MENU to display the main menu.

2 Select "PRESET" with Δ+ or ∇– and press OK.
The PRESET menu appears. (See Fig. 5.)

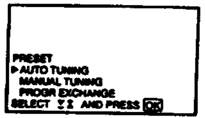
3 Select "AUTO TUNING" with Δ+ or ∇– and press OK.
The AUTO TUNING menu appears. (See Fig. 6.)

4 Select the programme with -/-- and enter the digit numbers from which you want to start presetting.

5 Press OK. Select if necessary the TV broadcast system with Δ+ or ∇– and press OK. (B/G for western European countries, D/K for eastern European countries, L for France and I for the United Kingdom.)

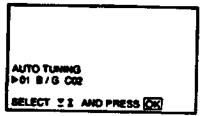
6 Using Δ+ or ∇–, select C (to start presetting regular channels) or S (to start presetting cable channels) and press OK.
The automatic channel presetting starts.
When presetting is finished, the preset menu reappears. All available channels are now stored on successive number buttons.
If you want to change to another broadcasting system, repeat steps 3 to 5.

7 Press MENU to return to TV picture.



PRESET
▶AUTO TUNING
MANUAL TUNING
PROGR EXCHANGE
SELECT ▽△ AND PRESS OK

Fig. 5



AUTO TUNING
▶01 B/G C02
SELECT ▽△ AND PRESS OK

Fig. 6

Use this method if there are only a few channels in your area to preset or if you want to preset channels one by one.

**If you have made a mistake**
Press ⇐ to go back to the previous position.

**To return to the main menu**
Keep pressing ⇐.

## Preset Channels Manually

1 Press MENU to display the main menu.

2 Select "PRESET" with Δ+ or ∇– and press OK. (See Fig. 7.)

3 Select "MANUAL TUNING" with Δ+ or ∇– and press OK.
The MANUAL TUNING menu appears. (See Fig. 8.)

4 Using Δ+ or ∇–, select the programme position to which you want to preset a channel, and press OK.
You can also select the programme position with the number buttons (e.g, for programme 24, press -/--, 2 and 4).

5 Select, if necessary, the TV broadcast system (B/G for western European countries, D/K for eastern European countries, L for France and I for the United Kingdom) with Δ+ or ∇–. Then press OK.

6 Using Δ+ or ∇–, select C (to start presetting regular channels) or S (to start presetting cable channels) and press OK.

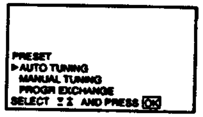
7 Press Δ+ or ∇– until the channel you want appears on the screen.
You can also select the channel directly using the number buttons. Press C (once for VHF/UHF channels, twice for cable TV channels), then the number buttons (e.g., for channel 5, press 0 and 5).
Then press OK.

### *To preset other channels*

Repeat steps 4 to 7.

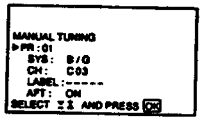
### *To return to TV picture*

Press MENU.



PRESET
▶AUTO TUNING
MANUAL TUNING
PROGR EXCHANGE
SELECT ▽△ AND PRESS OK

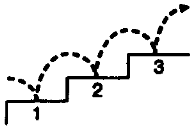
Fig. 7



MANUAL TUNING
▶PR : 01
SYS : B/G
CH : C03
LABEL : ------
AFT : ON
SELECT ▽△ AND PRESS OK

Fig. 8

# Additional Presetting Functions



This section shows you additional presetting functions such as exchanging or skipping programme positions, captioning a station name, and manual fine-tuning.

You can skip this section, if not needed.

### Before you begin

- Check that the Full Function side of the Remote Commander is visible.
- Locate the Menu operation buttons.

**PROGRAMME EXCHANGE**

## Exchanging Programme Positions

With this function, you can exchange the programme positions to a preferable order.

1 Press MENU to display the main menu.

2 Select "PRESET" with Δ+ or ∇– and press OK.
The PRESET menu appears.

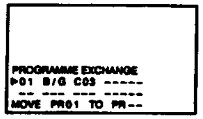
3 Select "PROGRAMME EXCHANGE" with Δ+ or ∇– and press OK.
The PROGRAMME EXCHANGE menu appears. (See Fig. 9.)

4 Using Δ+ or ∇–, select the programme position you want to exchange with another and press OK.

5 Using Δ+ or ∇–, select the programme position to be exchanged and press OK. Now the two programme positions have been exchanged.

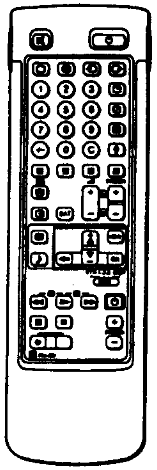
6 Repeat steps 4 and 5 to exchange other programme positions.

7 Press MENU to return to TV picture.



```
PROGRAMME EXCHANGE
▶01  B/G  C03  -----
 --  ---  ---  -----
MOVE  PR01  TO  PR--
```

Fig. 9



**If you have made a mistake**
Press ⇐ to go back to the previous position.

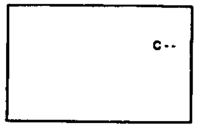
**To go back to main menu**
Keep pressing ⇐.

## Tuning in to a Channel Temporarily

You can tune in to a channel temporarily, even when it has not been preset. Use the buttons on the Full-Function side of the Remote Commander.

1 Press C on the Remote Commander for regular channels, or twice to get cable channels.
The indication "C" ("S" for cable channels) appears on the screen. (See Fig. 10.)

2 Enter the double-digit channel number using the number buttons (e.g. for channel 4, first press 0, then 4).
The channel appears.
However, the channel will not be stored.



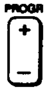
```
C--
```

Fig. 10

**MANUAL TUNING**

## Skipping Programme Positions

You can skip unused programme positions when selecting programmes with the PROGR +/– buttons. However, the skipped programmes may still be called up when you use the number buttons.



1 Press MENU to display the main menu.

2 Select "PRESET" with Δ+ or ∇– and press OK.
The PRESET menu appears.

3 Select "MANUAL TUNING" with Δ+ or ∇– and press OK.
The MANUAL TUNING menu appears. (See Fig.11.)

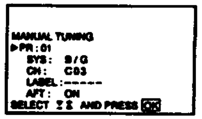
4 Using Δ+ or ∇–, select the programme position which you want to skip and press OK.

5 Press Δ+ or ∇– until "---" appears in the SYS position. (See Fig. 12.)

6 Press OK.
When you select programmes using the PROGR +/– buttons, the programme position will be skipped.

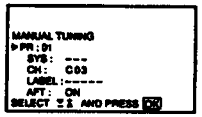
7 Repeat steps 4 to 6 to skip other programme positions.

8 Press MENU to return to TV picture.



```
MANUAL TUNING
▶PR : 01
   SYS :  B/G
   CH :   C03
   LABEL : -----
   AFT :  ON
SELECT ⇕ AND PRESS OK
```

Fig. 11



```
MANUAL TUNING
▶PR : 01
   SYS :  ---
   CH :   C03
   LABEL : -----
   AFT :  ON
SELECT ⇕ AND PRESS OK
```

Fig. 12

**If you have made a mistake**
Press ⇐ to go back to the previous position.

**To go back to main menu**
Keep pressing ⇐.

**MANUAL TUNING**

## Captioning a Station Name

You can "name" a channel using up to five characters (letters or numbers) to be displayed on the TV screen (e.g. BBC1). Using this function, you can easily identify which channel you are watching.

1 Press MENU to display the main menu.

2 Select "PRESET" with Δ+ or ∇– and press OK.
The PRESET menu appears.

3 Select "MANUAL TUNING" with Δ+ or ∇– and press OK.
The MANUAL TUNING menu appears.

4 Select "PR" with Δ+ or ∇– and press OK.

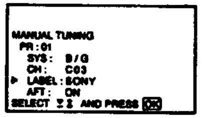
5 Select programme position you want to caption with Δ+ or ∇– and press OK.

6 Select "LABEL" with Δ+ or ∇– and press OK.

7 Select a letter or number with Δ+ or ∇– and press OK.
Select other characters in the same way. If you want to leave an element blank, select - and press OK. (See Fig. 13.)

8 Repeat steps 4 to 7 to caption names for other channels.

9 Press MENU to return to TV picture.



```
MANUAL TUNING
  PR : 01
   SYS :  B/G
   CH :   C03
▶  LABEL : SONY
   AFT :  ON
SELECT ⇕ AND PRESS OK
```

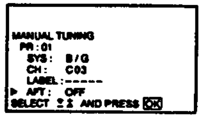
Fig.13

## Manual Fine-Tuning

Normally, the AFT (automatic fine-tuning) is already operating. However, if the picture is distorted, you can use the manual fine tuning function to obtain better picture reception.

1 Press MENU to display the main menu.
2 Select "PRESET" with Δ+ or ∇– and press OK.
The PRESET menu appears.
3 Select "MANUAL TUNING" with Δ+ or ∇– and press OK.
The MANUAL TUNING menu appears.
4 Select "PR" with Δ+ or ∇– and press OK.
5 Select programme position you want to manually fine-tune with Δ+ or ∇– and press OK.
6 Select "AFT" with Δ+ or ∇– and press OK.
7 Select "OFF" with Δ+ or ∇– and press OK. (See Fig. 14.)
8 Fine-tune the channel with Δ+ or ∇– so that you get the best TV reception. As you press the cursor buttons, the frequency changes from – 128 to + 127.
9 After fine tuning, press OK.
Now the fine-tuned level is stored.
10 Repeat steps 4 to 9 to fine-tune other channels.
11 Press MENU to return to TV picture.

**To reactivate AFT (automatic fine tuning)**
Repeat from the beginning and select "ON" in step 7.

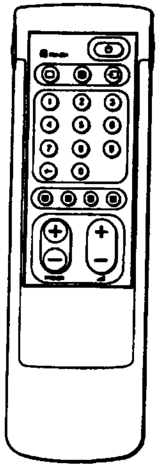


```
MANUAL TUNING
  PR : 01
    SYS :   B/G
    CH :    C03
    LABEL : ------
▶   AFT :   OFF
SELECT ▽△  AND PRESS OK
```

Fig. 14

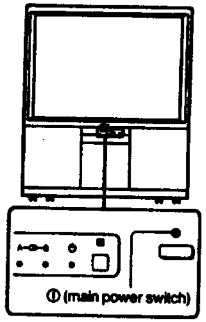
# Operating Instructions

## Watching the TV



If no picture appears when you depress ⦶ on the TV and if the standby indicator on the TV is lit, the TV is in standby mode.
Press ▭ or one of the number buttons to switch it on.

This section explains the basic functions you use while watching TV. Most of the operations can be done using the simple side of the Remote Commander.



### Switching the TV on and off

*Switching on*

Depress ⦶ (main power switch) on the TV unit.

*Switching off temporarily*

Press ⏻ on the Remote Commander.
The TV enters standby mode and the standby indicator on the front of the TV lights up.

**To switch on again**

Press ▭, PROGR +/–, or one of the number buttons on the Remote Commander.

*Switching off completely*

Depress ⦶ (main power switch) on the TV unit.

### Selecting TV Programmes

Press PROGR +/– or press the number buttons.

*To select a double-digit number*

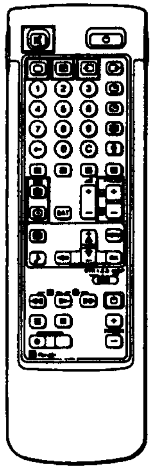
Press -/--, then the numbers.
For example, if you want to choose 23, press -/--, 2, and 3.

### Adjusting the Volume

Press ⊿ +/–.

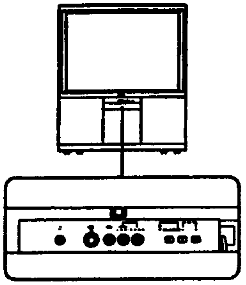
For details of the teletext operation, refer to page 19.

For details of the video input picture, refer to page 23.



## Operating the TV Using the Buttons on the TV

With the –/+ buttons on the TV, you can select programmes, adjust the volume, and select video input sources.



### *To switch on the TV from the standby mode*

Press the –/+ buttons.

### *To reset picture and sound controls to the factory preset level (RESET function)*

Press the –/+ buttons simultaneously.

### *To select TV programmes*

Press P–◢–⊕ repeatedly until the programme number appears, then press the –/+ button to select.

### *To adjust the volume*

Press P–◢–⊕ repeatedly until the ◢▮▮▮ appears, then press the –/+ button to adjust. (See Fig. 15.)

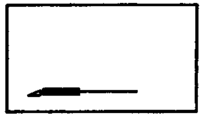


Fig. 15

### *To select video input sources*

Press P–◢–⊕ repeatedly until the ⊕ (video input indication) appears, then press the –/+ button to select. Each pressing the button, the indication changes as follows.

AV1→RGB→AV2→YC2
↑ ↓
YC4←AV4←YC3←AV3

After the video input source is selected, the ◢▮▮▮ appears. Press the –/+ button to adjust the volume. (See Fig. 16.)

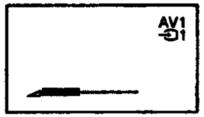


Fig. 16

## Watching Teletext or Video Input

### *Watching teletext*

1 Press ⊜ to view the teletext.

2 For teletext operation, enter a 3-digit page number with the number buttons to select a page.
For fastext operation, press one of the coloured buttons.
For both operations, press ⊕ (PAGE + ) for the next page or ⊖ (PAGE – ) for the preceding page.

3 To go back to the normal TV picture, press ▢ .

### *Watching a video input picture*

1 Press ⊕ repeatedly until the desired video input appears.

2 To go back to the normal TV picture, press ▢.

## More Convenient Functions

Use the Full-Function side of the Remote Commander.

### *Displaying the on screen indications*

- Press ⊕ once to display all the indications.
- Press ⊕ again to make the indications disappear.

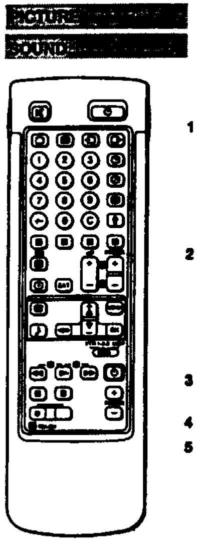
### *Muting the sound*

Press ≪.
To resume normal sound, press ≪ again.

### *Displaying the time*

Press ⊕. This function is available only when teletext is broadcast.
To make the time display disappear, press ⊕ again.

# Adjusting and Setting the TV Using the Menu



## Adjusting the Picture and Sound

Although the picture and sound are adjusted at the factory, you can adjust them to suit your own taste. You can also select dual sound (bilingual) programmes when available or adjust the sound for listening with the headphones.

1 Press ● (for picture) or ♪ (for sound) on the remote Commander.

or

Press MENU and select "PICTURE" or "SOUND," then press OK. The PICTURE ADJUSTMENT or SOUND ADJUSTMENT menu appears.
(See Fig. 17 or Fig. 18.)

2 Using △+ or ▽–, select the item you want to adjust and press OK.
To move up/down:
From ⊞ position, press ▽– to move down.
From ⊞ position, press △+ to move up.

⊞ means next page.
⊞ means previous page.

3 Adjust the setting with △+ or ▽– and press OK.
For the effect of each control, see the table below.

4 Repeat steps 2 and 3 to adjust other items.

5 Press MENU to return to TV picture.

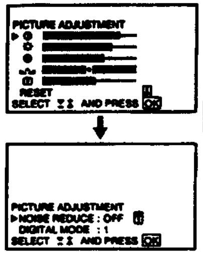


Fig. 17

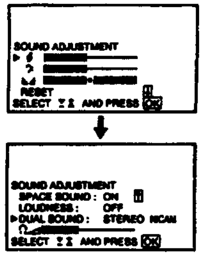


Fig. 18

**If you have made a mistake**
Press ⇐ to go back to the previous position.
**To go back to the main menu**
Keep pressing ⇐.

**Note**
Hue is only available for NTSC colour systems.

**Note on LINE OUT**
The audio level and the dual sound mode output from the ⊕ jack on the rear correspond to the Headphone VOLUME and DUAL SOUND settings.

**When watching a video input picture**
You can select DUAL SOUND to change the sound.

### *Effect of each control*

| PICTURE ADJUSTMENT | Effect |
|---|---|
| ◑ (contrast) | Less ▬▬▬—— More |
| ☼ (brightness) | Darker ▬▬▬—— Brighter |
| ● (colour) | Less ▬▬▬—— More |
| ◬ (hue) | Greenish ▬▬▬•▬▬▬ Reddish |
| ◐ (sharpness) | Softer ▬▬▬—— Sharper |
| RESET | Resets picture to the factory preset levels. |
| NOISE REDUCE | OFF: Normal ON: When reducing the picture noise |
| DIGITAL MODE | 1: Line Flicker reduction on.<br>2: Line Flicker reduction off. |

| SOUND ADJUSTMENT | Effect |
|---|---|
| ♯ (Treble) | Less ▬▬▬—— More |
| ? (Bass) | Less ▬▬▬—— More |
| ◺◿ (Balance) | More left ▬▬▬•▬▬▬ More right |
| RESET | Resets sound to the factory preset levels. |
| SPACE SOUND | OFF: Normal ON: Obtain acoustic sound effect. |
| LOUDNESS | OFF: Normal ON: When listening to low volume sound. |
| DUAL SOUND* | A: left channel B: right channel Stereo mono<br>STEREO ←→ MONO<br>The selected mode of the A-CD-B indicator on the TV lights up. |
| Ω (Headphones) | Less◿ ▬▬▬—— |

*When receiving a NICAM programme

NICAM stereo/monaural STEREO NICAM → MONO

NICAM bilingual NICAM A → NICAM B → MONO

**FEATURES**

## Using the SLEEP TIMER

You can select a time period after which the TV automatically switches into standby mode.

1 Press MENU to display the main menu.

2 Select "FEATURES" with Δ+ or ∇– and press OK.
The FEATURES menu appears.

3 Select "SLEEP TIMER" with Δ+ or ∇– and press OK. (See Fig. 19.)
The time period option changes colour.

4 Select the time period with Δ+ or ∇–.
The time period changes as follows:

OFF → 0:30 → 1:00 → 1:30 → 2:00

5 After selecting the time period, press OK.
The cursor moves back to the left margin and the timer starts counting.
One minute before the TV switches into standby mode, a message is displayed on the screen.

6 Press MENU to return to TV picture.

**To switch off the timer**
Select "OFF" in step 3.

**To check the remaining time**
Press ⊙.

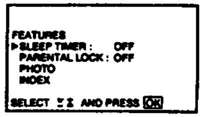

FEATURES
▶SLEEP TIMER : OFF
PARENTAL LOCK : OFF
PHOTO
INDEX
SELECT ▽△ AND PRESS OK

Fig. 19

**FEATURES**

## PARENTAL LOCK

You can prevent undesirable broadcasts from appearing on the screen. We suggest you use this function to prevent children from watching programmes which you consider unsuitable.

1 Select the TV programme which you want to block.

2 Press MENU to display the main menu.

3 Select "FEATURES" with Δ+ or ∇– and press OK.
The FEATURES menu appears.

4 Select "PARENTAL LOCK" with Δ+ or ∇– and press OK.

5 Select "ON" with Δ+ or ∇– and press OK. (See Fig. 20.)

6 Press MENU to return to TV picture.

**If you try to select a programme that has been blocked**
The message "LOCKED" appears on the blank TV screen.

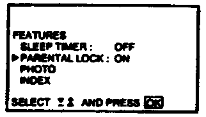

FEATURES
SLEEP TIMER : OFF
▶PARENTAL LOCK : ON
PHOTO
INDEX
SELECT ▽△ AND PRESS OK

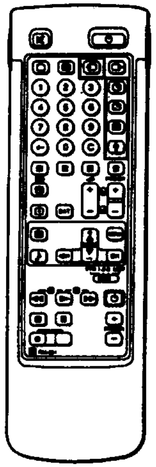
Fig. 20

### *Cancelling PARENTAL LOCK*

1 On the PARENTAL LOCK menu, select "OFF" with Δ+ or ∇–.

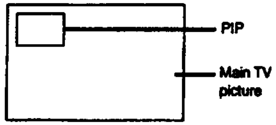
2 Press OK.

# PIP (Picture In Picture)



**Note**
RGB input source cannot be displayed in PIP.

With this function you can display a "PIP screen" (small picture) within the main TV picture. In this way you can watch or monitor the video output from any connected equipment (for example from a VTR) while watching TV or vice versa. For information about connection of other equipment, refer to page 22.



### *Switching PIP on and off*

Press ◷.
The PIP screen will be displayed. The PIP picture will come from the source chosen when the TV was last used.

**To Switch PIP off**
Press ◷ again.

### *Selecting a PIP source*

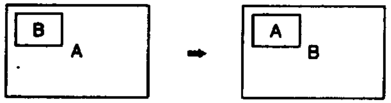
1 Press †.
The symbol † will be displayed at the bottom, left-hand corner of the screen.

2 Press ⇥ repeatedly until the desired PIP source is indicated (e.g. TV, AV1, AV2, YC2, AV3, YC3, AV4, YC4).

**Note**
If no video source has been connected, the PIP picture will be noisy.

### *Swapping screens*

Press ⊘.
The main screen will switch the picture with the PIP screen.

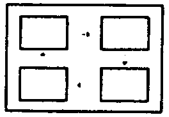


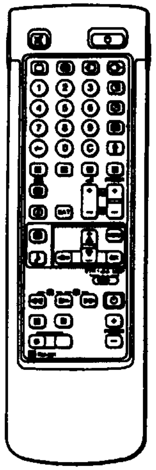
**Notes**

- If a TV programme is on the PIP screen and a video source on the main picture, and you want to change channels, first press † and then the programme number buttons or PROGR +/–.
- Swapping screens takes about 2 seconds after pressing ⊘.
- After swapping screens if the colour systems of the main and PIP pictures are different, the PIP picture first appears in black and white and then in colour.

### *Changing the position of the PIP*

Press ⊞ repeatedly to change the position of the PIP screen within the main screen. There are four different positions available.





## Displaying Frame-by-frame Pictures (PHOTO)

1 Press MENU to display the main menu.

2 Select "FEATURES" with Δ+ or ∇– and press OK.
The FEATURES menu appears. (See Fig. 21.)

3 Select "PHOTO" with Δ+ or ∇– and press OK. (See Fig. 22.)
The preset programme is displayed in nine separated screen in sequence. (See Fig. 23.)

*To restore the normal picture*

Press OK and MENU.

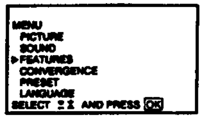

MENU
PICTURE
SOUND
▶FEATURES
CONVERGENCE
PRESET
LANGUAGE
SELECT ∇Δ AND PRESS OK

Fig. 21

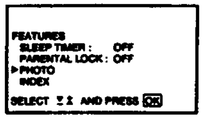

FEATURES
SLEEP TIMER : OFF
PARENTAL LOCK : OFF
▶PHOTO
INDEX
SELECT ∇Δ AND PRESS OK

Fig. 22

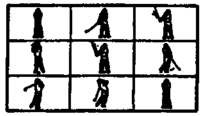


Fig. 23

## Checking All the Preset Programmes (INDEX)

1 Press MENU to display the main menu.

2 Select "FEATURES" with Δ+ or ∇– and press OK.
The FEATURES menu appears. (See Fig. 24.)

3 Select "INDEX" with Δ+ or ∇– and press OK. (See Fig. 25.)
The nine preset programmes appear in the separated screen in sequence, switching the picture for each seconds. After all the nine programmes are displayed, each sequence switch the picture with the sound for each five seconds. Press Δ+ also switches to the next nine programmes. (See Fig. 26.)

*To restore the normal picture*

Press OK and MENU.

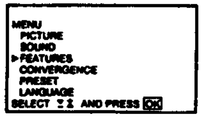

MENU
PICTURE
SOUND
▶FEATURES
CONVERGENCE
PRESET
LANGUAGE
SELECT ∇Δ AND PRESS OK

Fig. 24

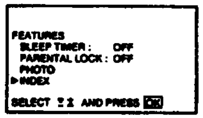

FEATURES
SLEEP TIMER : OFF
PARENTAL LOCK : OFF
PHOTO
▶INDEX
SELECT ∇Δ AND PRESS OK

Fig. 25

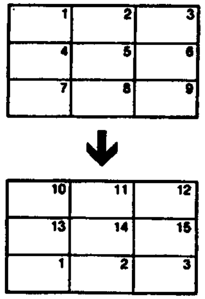
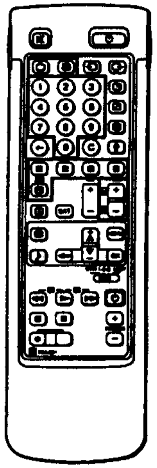

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1
2
3

Fig. 26

# Teletext

TV stations broadcast an information service called Teletext via the TV channels.Teletext service allows you to receive various information pages such as weather reports or news at any time you want. For advanced teletext operation, use the buttons on the Full-Function side of the Remote Commander.



**Note**
Teletext errors may occur if the broadcasting signals are weak.

**With the simple side of the Remote Commander**
You can switch teletext on and off, operate Fastext, and directly select page numbers.

**Note**
Fastext operation is only possible, if the TV station broadcasts Fastext signals.

## Direct Access Functions

### Switching Teletext on and off

1 Select the TV channel which carries the teletext broadcast you want to watch.

2 Press ⓔ to switch on teletext.
A teletext page will be displayed (usually the index page).
If there is no teletext broadcast, "No text available" is displayed on the information line at the top of the screen.

**To switch teletext off**

Press ▢.

### Selecting a teletext page

**With direct page selection**

Use the number buttons to input the three digits of the chosen page number.
If you have made a mistake, type in any three digits. Then re-enter the correct page number.
If the requested page is not available at that moment, a message will be displayed.

**Accessing next or preceding page**

Press ⊕ (PAGE+) or ⊖ (PAGE-).
The next or preceding page appears.

**Superimposing the teletext display on the TV programme**

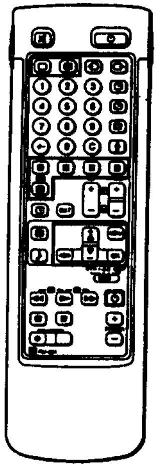
- Press ⓔ once in teletext mode or twice in TV mode.
- Press ⓔ again to resume normal teletext reception.

### Preventing a teletext page from being updated

- Press ⓗ (HOLD). The HOLD symbol "ⓗ" is displayed on the information line.
- Press ⓗ to resume normal teletext reception.

### Using Fastext

With Fastext you can access pages with one key stroke.
When a Fastext page is broadcast, a colour-coded menu will appear at the bottom of the screen. The colours of this menu correspond to the red, green, yellow and blue buttons on the Remote Commander.
Press the corresponding coloured button on the Remote Commander which corresponds to the colour-coded menu. The page will be displayed after a few seconds.



**Note**
Some of the features may not be available depending on the teletext service.

# Using the Teletext Menu

This TV is provided with a menu-guided teletext system. When teletext is switched on, you can use the menu buttons to operate the teletext menu. Select the teletext menu functions in the following way:

1 Press MENU. The menu will be superimposed on the teletext display. (See Fig. 27.)

2 Using Δ+ or ∇−, select the teletext function you want and press OK.

## INDEX

The index will give you an overview of the contents of the teletext and the page numbers.

## ENLARGING

For convenient reading of a teletext page, you can enlarge the teletext display with the ability to scroll up and down. After having selected the function, an information line TOP/BOTTOM/FULL will be displayed. (See Fig. 28.)

To enlarge the upper half with "TOP", select "TOP" and hold down the ∇−. To enlarge the lower half with "BOTTOM," select "BOTTOM" and hold down the Δ+. The picture can be scrolled up to 12 steps in each direction. Press OK for "FULL" to resume the normal size.

Press ⊜ to resume normal teletext reception.

## TEXT CLEAR

After selecting the function, you can watch a TV programme while waiting for a teletext page lo be displayed. (See Fig. 29.)

Press ⊜ to resume normal teletext reception.

## SUBTITLES

Your teletext service will inform you if a TV programme is subtitles.

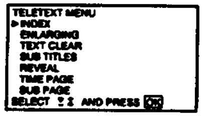
After having selected the function the subtitles will be displayed.

## REVEAL

Sometimes pages contain concealed information, such as answers to a quiz. The REVEAL option lets you disclose the information. After having selected the function, concealed information will be displayed.

By choosing REVEAL again on the menu, the concealed information will be canceled.

Press ⊜ to resume normal teletext reception.



TELETEXT MENU
▶ INDEX
ENLARGING
TEXT CLEAR
SUB TITLES
REVEAL
TIME PAGE
SUB PAGE
SELECT ▾▴ AND PRESS OK

Fig. 27

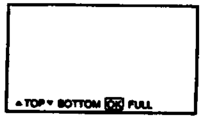


Fig. 28

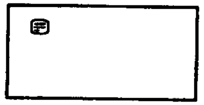


Fig. 29

## TIME PAGE

Your teletext service will inform you, if a time coded page is available. You may have a page (e.g. an alarm page) displayed at a certain time.

Press OK to select "OFF" for the TIME PAGE setting to cancel the request.

1 Using Δ+ or ∇−, select "ON." Press OK.
The TV programme you were watching before you selected TIME PAGE is restored.
An information window will be displayed at the bottom of the page.

2 To select the desired page, enter three digits for the page number (e.g.452) using the number buttons and press OK.

3 To select the desired time, enter four digits for the desired time (e.g. 1800) using the number buttons and press OK.
The selected time is displayed at the top in the left-hand corner.
At the requested time, the page will be displayed.
Press ⊜ to resume normal teletext mode.

To cancel the request Select SUBPAGE and press OK.

## SUBPAGE

You may want to select a particular teletext page from several subpages which are rotated automatically. After having selected the function, an information line will be displayed.

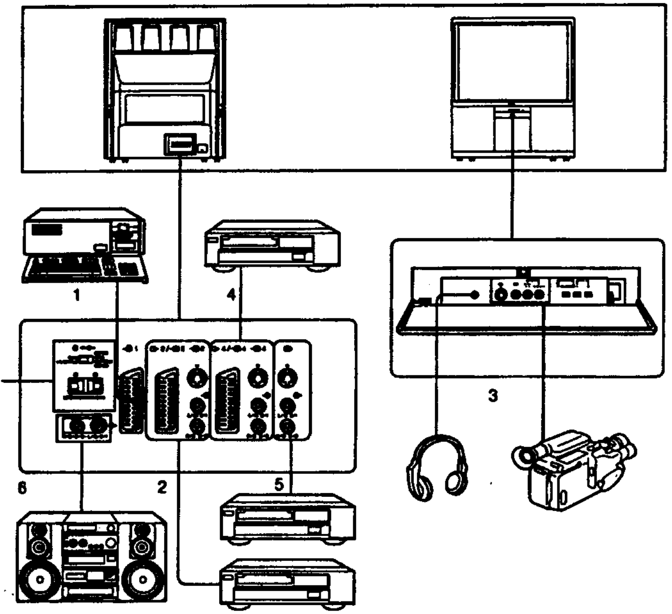
To select the desired subpage, enter four digits using PROGR +/− or the number buttons (e.g. enter 0002 for the second page of a sequence).

**Note:**
"TIME PAGE" and "SUBPAGE" features may not be available depending on the teletext service.

# Connecting and Operating Optional Equipment

## Connecting Optional Equipment

You can connect optional audio-video equipment to this TV such as a VCR, video disc player, and stereo system.



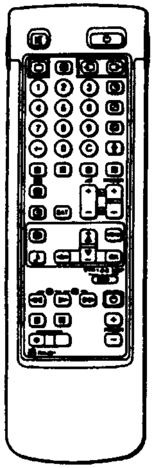
| Acceptable input signal | Available output signal |
|---|---|
| 1 Normal audio/video and RGB signal | Video/audio from TV tuner |
| 2 Normal audio/video and S video signal | Video/audio from selected source |
| 3 Normal audio/video and S video signal | No outputs |
| 4 Normal audio/video and S video signal | Video/audio displayed on TV screen (monitor out) |
| 5 No inputs | S/video/audio signal displayed on TV screen (monitor out) |
| 6 No inputs | Audio signal (variable) |
| 7 Centre speaker input.<br>Select to CENTRE when TV set's speakers are used for external amplifier (e.g. Dolby amplifier).<br>For normal operation, switch position is MAIN. | No outputs |

**To connect a VCR using the T terminal**
Connect the serial output of the VCR to the serial terminal T of the TV.
We recommend that you tune in the video signal to programme number "0." For details see "Preset channels manually" on page 9.

**If the picture or the sound is distorted**
Move the VCR away from the TV.

**S/video Input (Y/C input)**
Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals. Separating the Y and C signals prevents them from interfering with one another, and therefore improves picture quality (especially luminance). This TV is equipped with 3 S Video input jacks through which these separated signals can be input directly.

**When connecting a monaural VCR**
Connect only the white -⊖ jack to both the TV and VCR.



-⊖1 connector always outputs the audio and video signals from the T aerial terminals.

⊖→4/-Ⓢ4 connector always outputs the audio and video signals which you are currently watching on the TV screen (i.e. monitor output).

## Selecting Input

This section explains how to view the video input picture (of the video source connected to your TV).

Press -⊖ repeatedly to select the input source.

The symbol of the selected input source will appear. (See Fig. 30.)

**To go back to the normal TV picture**

Press ○.

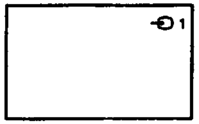


Fig. 30

| Symbol | Input signal |
|---|---|
| -⊖1 | Audio/video input through the -⊖1 connector |
| -⊖ | Audio/RGB input through the -⊖1 connector |
| -⊖2 | Audio/video input through the ⊖→2/ -Ⓢ2 connector |
| -Ⓢ2 | Audio/S video input through the ⊖→2/ -Ⓢ2 or -Ⓢ2 connector (4-pin connector) |
| -⊖3 | Audio/video input through -⊖3 and -⊖3 on the front |
| -Ⓢ3 | Audio/S video input through the -Ⓢ3 (4-pin connector) and -⊖3 connectors |
| -⊖4 | Audio/video input through the ⊖→4/ -Ⓢ4 connector |
| -Ⓢ4 | Audio/S video input through the ⊖→4 / -Ⓢ4 or -Ⓢ4 connector(4-pin connector) |

You can also select the input mode using the P-⊖ and -/+ buttons on the TV. In this case, first select -⊖, and then press -/+ buttons to select the input.

## Selecting Output from the ⊖→2/-Ⓢ2 Connector

You can select the output signal from the ⊖→2/-Ⓢ2 connector.
The ⊖→2/-Ⓢ2 connector outputs the input signals from the other connectors as indicated below.

Press ⊖→ repeatedly to select the output.

The symbol of the selected output source appears. (See Fig. 31.)

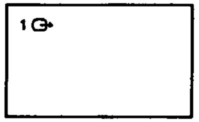
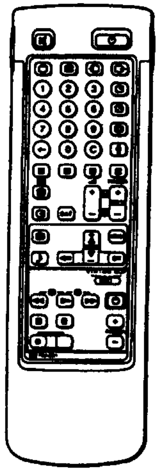


Fig. 31

| Symbol | Output signal of the ⊖→2/-Ⓢ2 connector |
|---|---|
| 1 ⊖→ | Audio/video signal from the -⊖1 connector |
| 2 ⊖→ | Audio/video signal from the ⊖→2/-Ⓢ2 connector |
| 2 Ⓢ→ | Audio/S video signal from the ⊖→2/-Ⓢ2 or -Ⓢ2 connector (4 pin) |
| 3 ⊖→ | Audio/video signal from the -⊖3, -⊖3 connectors |
| 3 Ⓢ→ | Audio/S video signal from the -Ⓢ3, -⊖3 connectors |
| 4 ⊖→ | Audio/video signal from the ⊖→4/ -Ⓢ4 connector |
| 4 Ⓢ→ | Audio/S video signal from the ⊖→4/-Ⓢ4 or -Ⓢ4 connector (4 pin) |
| TV⊖→ | Audio/video signal from the T aerial terminal |



When recording
When you use the ● (record) button, make sure to press this button and the one to the right of it simultaneously.

## Remote Control of Other Sony Equipment

You can use the TV Remote Commander to control most of Sony remote-controlled video equipment such as: beta, 8 mm and VHS VCRs and video disc players.

**Tuning the Remote Commander to the equipment**

1 Set the VTR 1/2/3 MDP selector according to the equipment you want to control:

VTR 1: Beta VCR
VTR 2: 8 mm VCR
VTR 3: VHS VCR
MDP: Video disc player

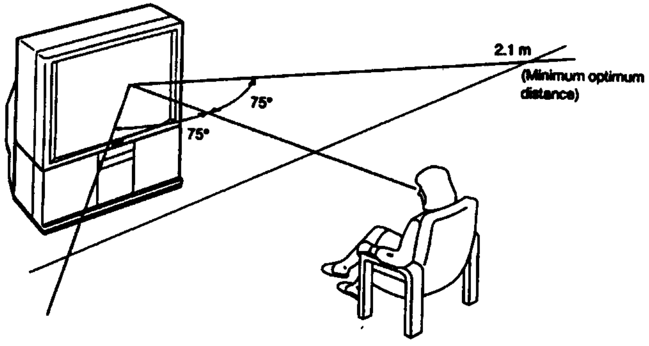
2 Use the buttons indicated in the illustration to operate the additional equipment.
If your video equipment is furnished with a COMMAND MODE selector, set this selector to the same position as the VTR 1/2/3 MDP selector on the TV Remote Commander.
If the equipment does not have a certain function, the corresponding button on the Remote Commander will not operate.

# For Your Information

## Optimum Viewing Area

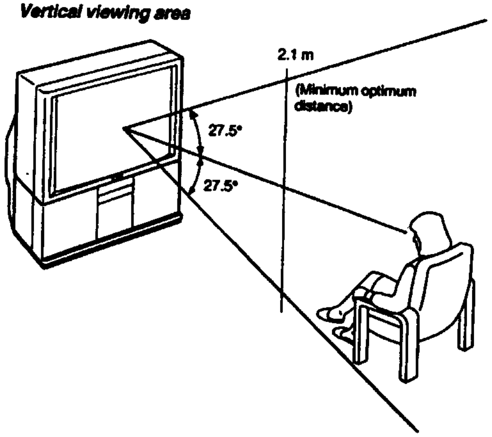
For the best picture quality, try to position the projection TV so that you can view the screen from within the areas shown below.

### *Horizontal viewing area*



Optimum viewing position

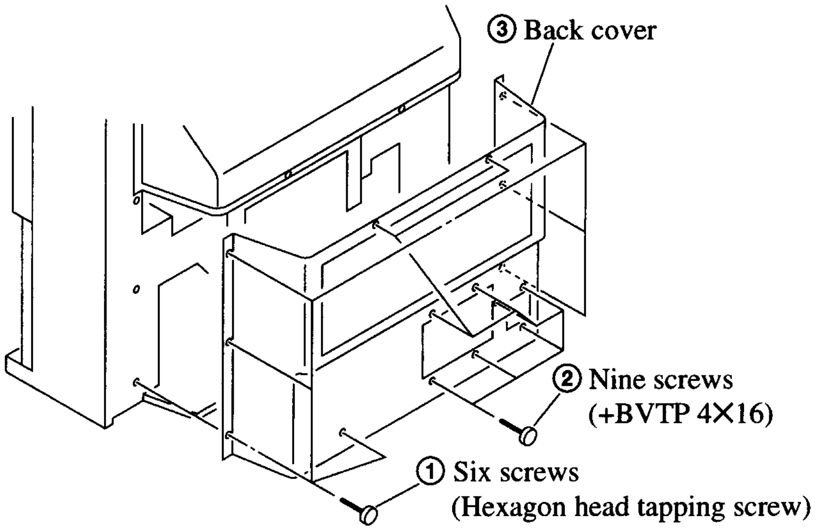
### *Vertical viewing area*



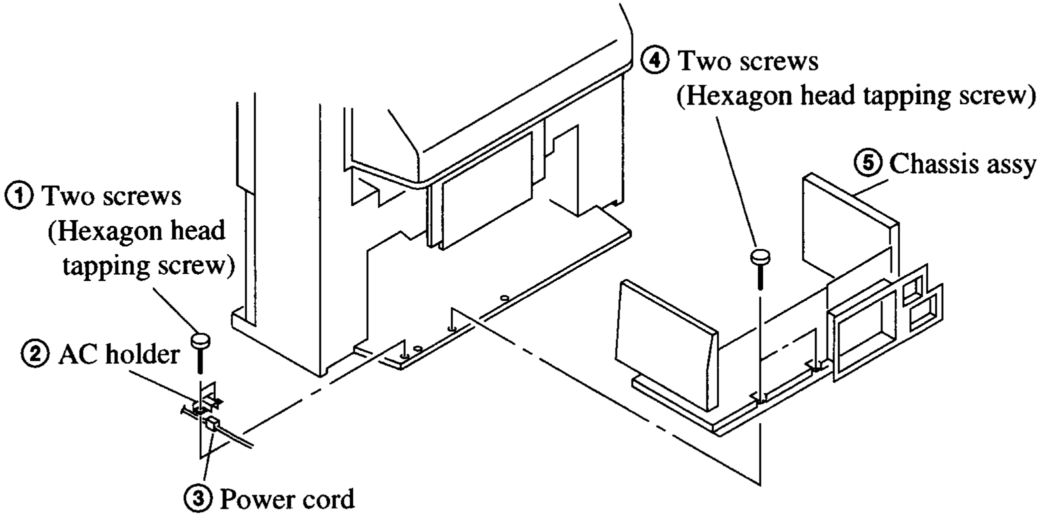
Optimum viewing position

# SECTION 2
# DISASSEMBLY

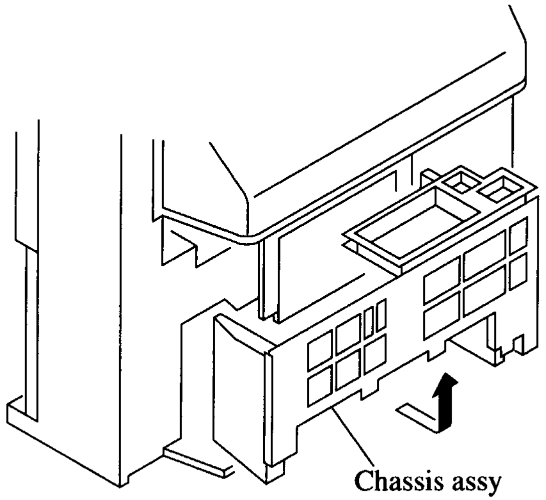
## 2-1-1. BACK COVER REMOVAL


③ Back cover
② Nine screws
(+BVTP 4X16)
① Six screws
(Hexagon head tapping screw)

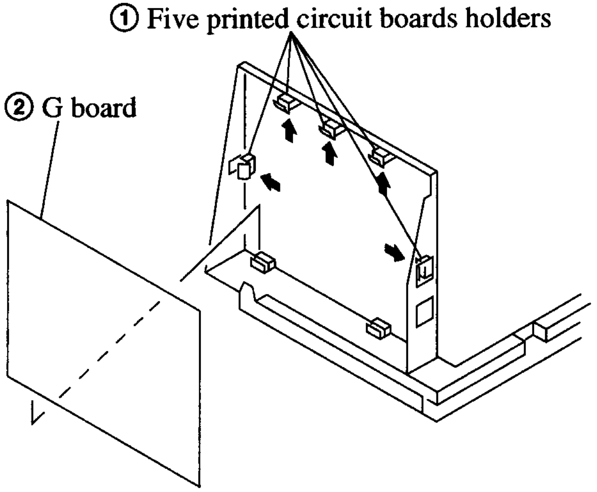
## 2-1-2. CHASSIS ASSY REMOVAL


④ Two screws
(Hexagon head tapping screw)
⑤ Chassis assy
① Two screws
(Hexagon head
tapping screw)
② AC holder
③ Power cord

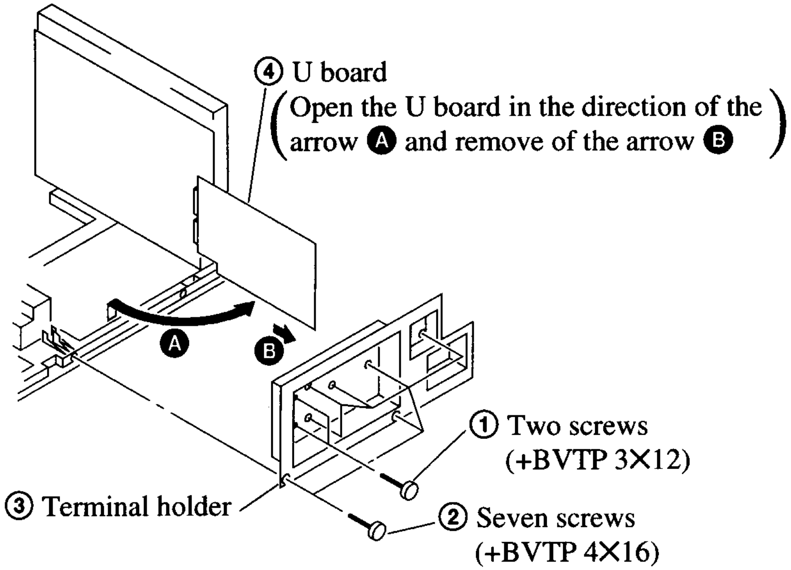
## 2-1-3. SERVICE POSITION


Chassis assy

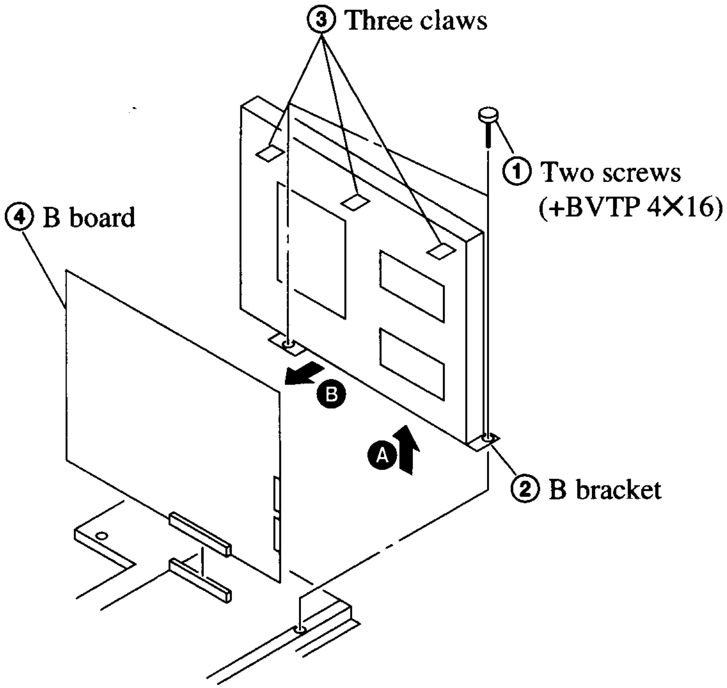
## 2-1-4. G BOARD REMOVAL


① Five printed circuit boards holders
② G board

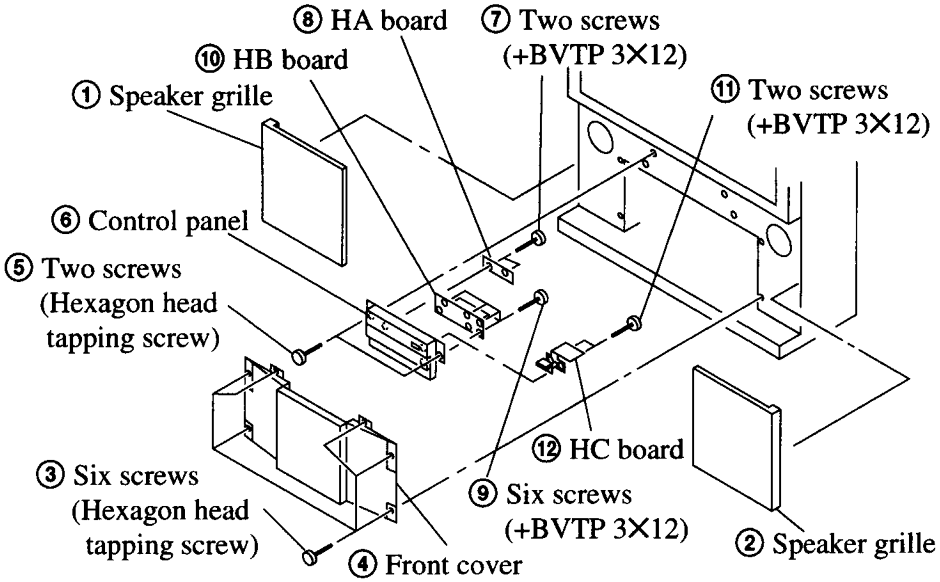
### 2-1-5. U BOARD REMOVAL


④ U board
(Open the U board in the direction of the arrow 🅐 and remove of the arrow 🅑)
🅐
🅑
① Two screws
(+BVTP 3X12)
③ Terminal holder
② Seven screws
(+BVTP 4X16)

### 2-1-6. B BOARD REMOVAL

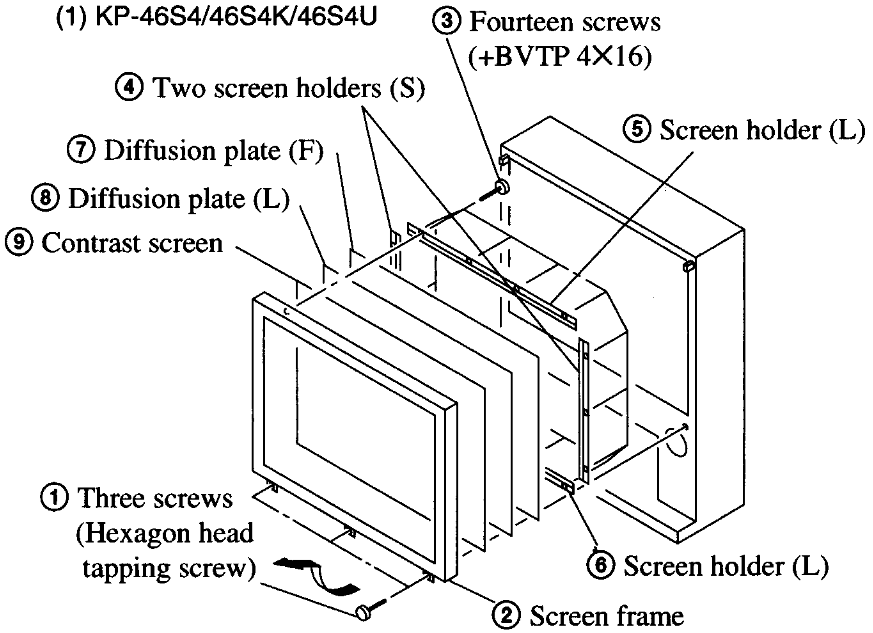

③ Three claws
① Two screws
(+BVTP 4X16)
④ B board
🅑
🅐
② B bracket

### 2-1-7. HA AND HB BOARDS REMOVAL

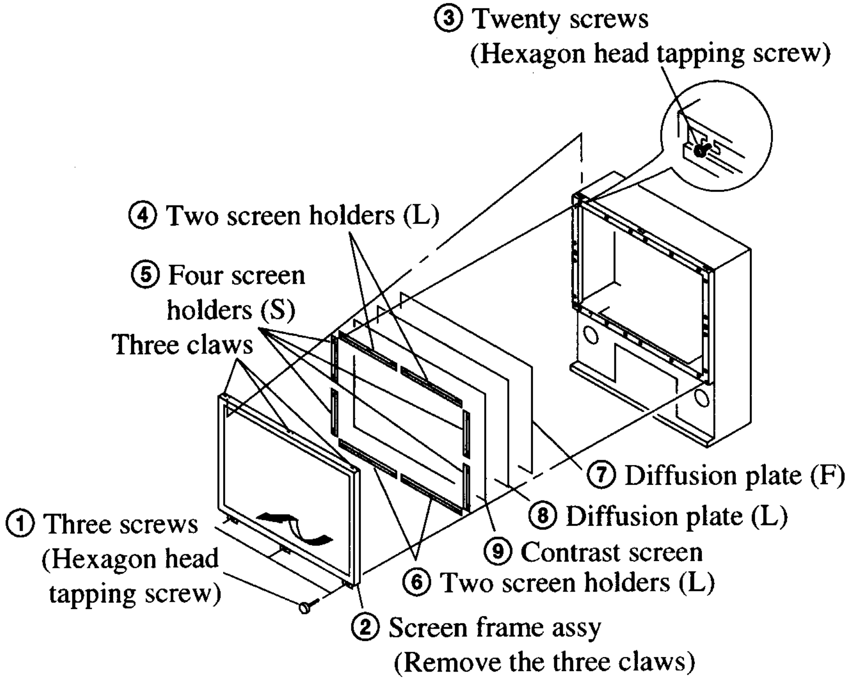

⑧ HA board
⑦ Two screws
(+BVTP 3X12)
⑩ HB board
① Speaker grille
⑪ Two screws
(+BVTP 3X12)
⑥ Control panel
⑤ Two screws
(Hexagon head
tapping screw)
③ Six screws
(Hexagon head
tapping screw)
⑫ HC board
⑨ Six screws
(+BVTP 3X12)
② Speaker grille
④ Front cover

### 2-1-8. BEZNET ASSY REMOVAL

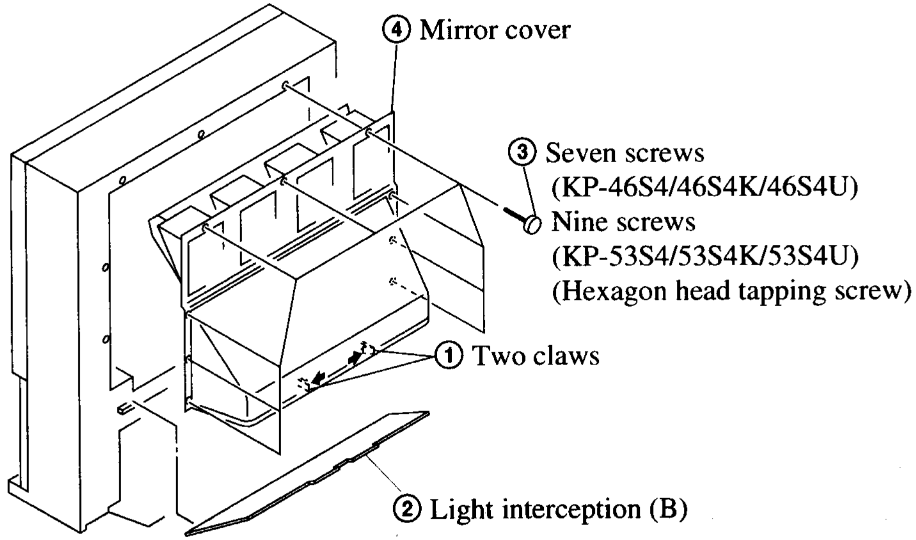
(1) KP-46S4/46S4K/46S4U


③ Fourteen screws
(+BVTP 4X16)
④ Two screen holders (S)
⑤ Screen holder (L)
⑦ Diffusion plate (F)
⑧ Diffusion plate (L)
⑨ Contrast screen
① Three screws
(Hexagon head
tapping screw)
⑥ Screen holder (L)
② Screen frame

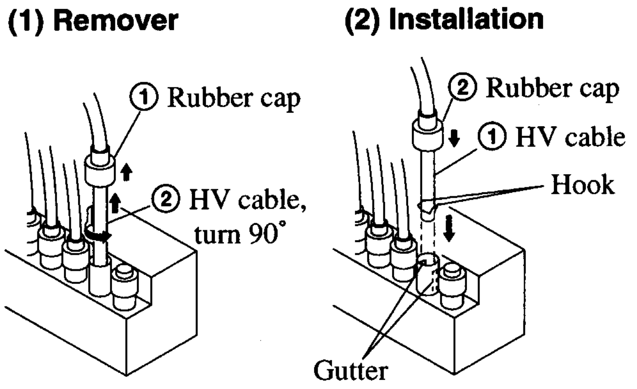
### (2) KP-53S4/53S4K/53S4U


③ Twenty screws
(Hexagon head tapping screw)
④ Two screen holders (L)
⑤ Four screen
holders (S)
Three claws
① Three screws
(Hexagon head
tapping screw)
⑦ Diffusion plate (F)
⑧ Diffusion plate (L)
⑨ Contrast screen
⑥ Two screen holders (L)
② Screen frame assy
(Remove the three claws)

### 2-1-9. MIRROR COVER ASSY REMOVAL


④ Mirror cover
③ Seven screws
(KP-46S4/46S4K/46S4U)
Nine screws
(KP-53S4/53S4K/53S4U)
(Hexagon head tapping screw)
① Two claws
② Light interception (B)

### 2-1-10. HIGH-VOLTAGE CABLE INSTALLATION AND REMOVAL

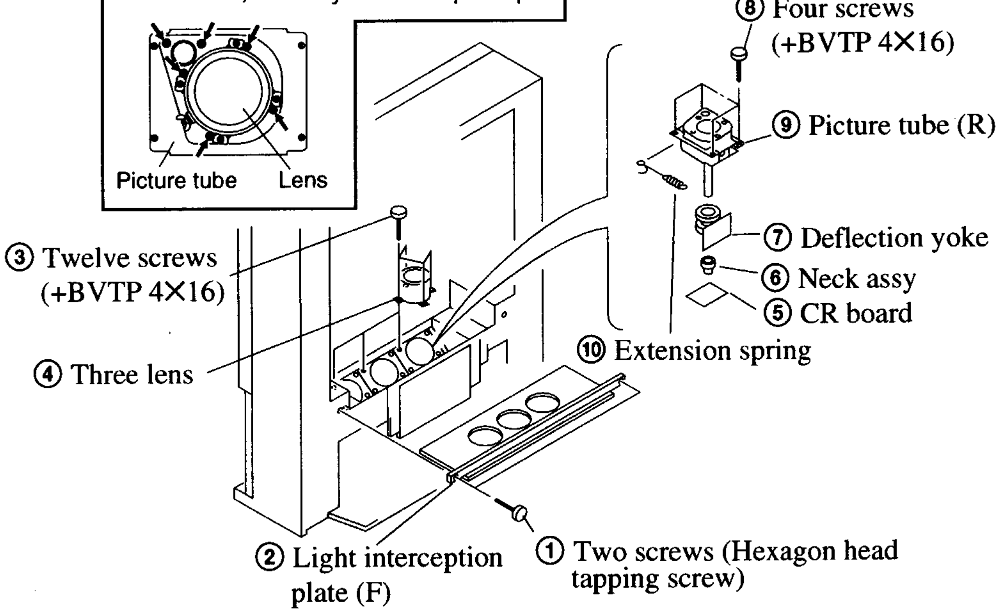

**(1) Remover** **(2) Installation**

① Rubber cap
② HV cable,
turn 90°
② Rubber cap
① HV cable
Hook
Gutter

### 2-1-11. PICTURE TUBE REMOVAL

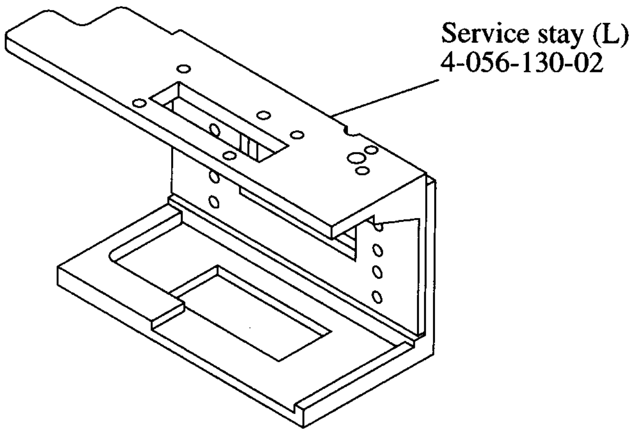
**CAUTION**

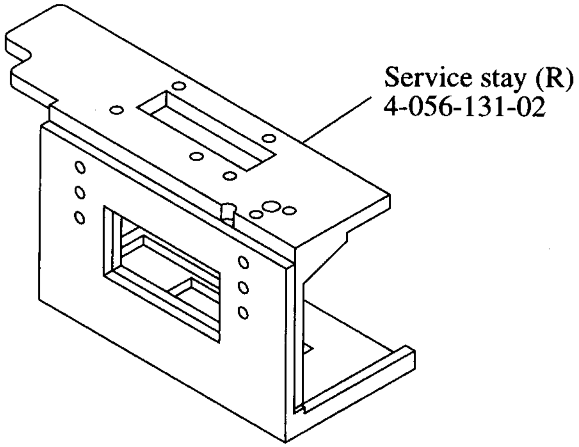
Removing the arrow-marked screws is strictly prohibit.
If removed, it many cause liquid spill.

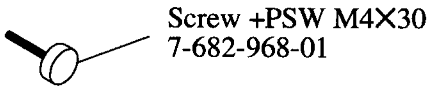

Picture tube
Lens
⑧ Four screws
(+BVTP 4X16)
⑨ Picture tube (R)
③ Twelve screws
(+BVTP 4X16)
⑦ Deflection yoke
⑥ Neck assy
⑤ CR board
⑩ Extension spring
④ Three lens
② Light interception
plate (F)
① Two screws (Hexagon head
tapping screw)

## 2-2.SERVICE STAY ASSY HOW TO USE AND CARRY BACK SERVICE STAY ASSY

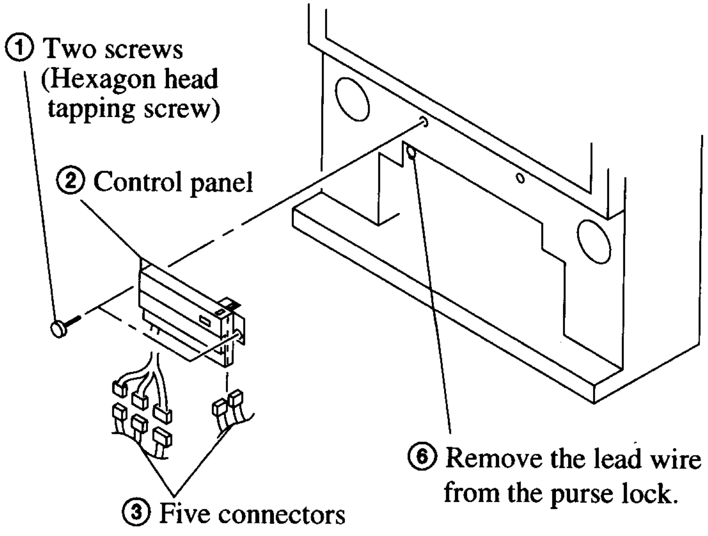
### 2-2-1. SERVICE STAY ASSY (X-4034-033-2)


Service stay (L)
4-056-130-02

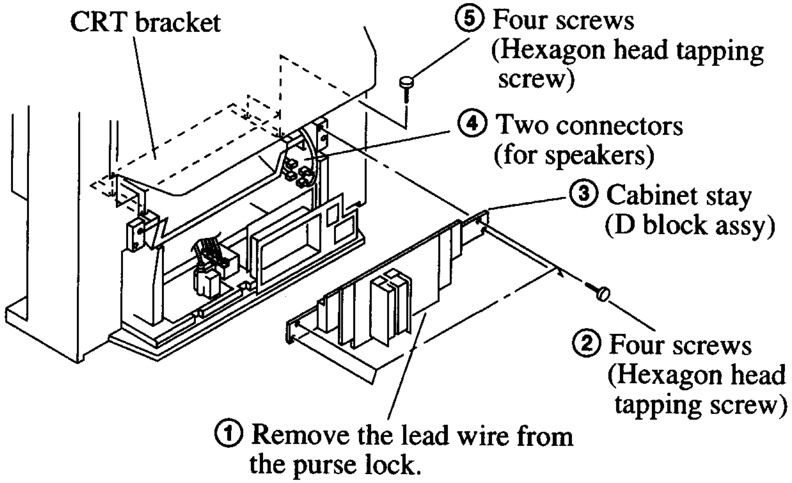

Service stay (R)
4-056-131-02


Screw +PSW M4X30
7-682-968-01

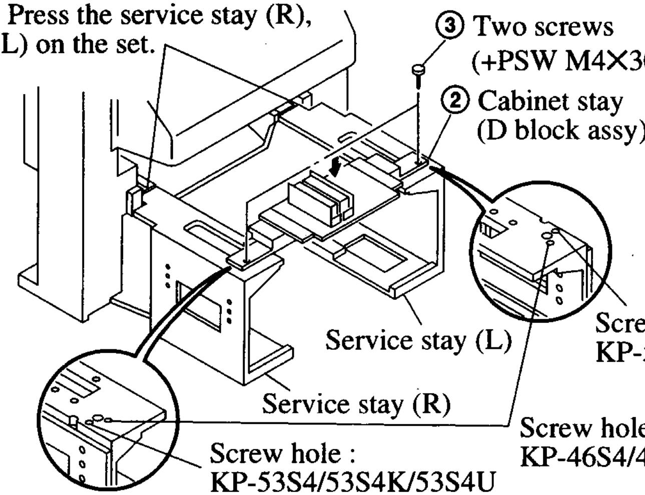
### 2-2-2.CONTROL PANEL REMOVAL


① Two screws
(Hexagon head
tapping screw)
② Control panel
③ Five connectors
⑥ Remove the lead wire
from the purse lock.

### 2-2-3. CABINET REMOVAL


CRT bracket
⑤ Four screws
(Hexagon head tapping
screw)
④ Two connectors
(for speakers)
③ Cabinet stay
(D block assy)
② Four screws
(Hexagon head
tapping screw)
① Remove the lead wire from
the purse lock.

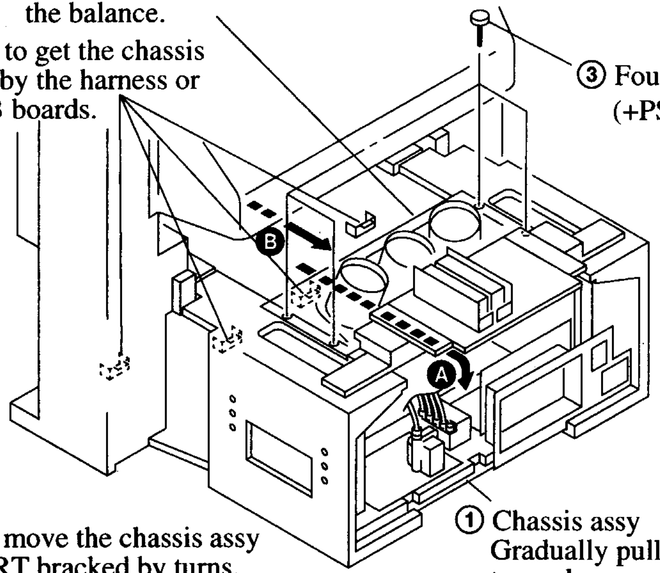
## 2-2-4. SETTING OF STAY ASSY


① Press the service stay (R), (L) on the set.
③ Two screws (+PSW M4X30)
② Cabinet stay (D block assy)
Service stay (L)
Screw hole : KP-53S4/53S4K/53S4U
Service stay (R)
Screw hole : KP-46S4/46S4K/46S4U
Screw hole : KP-53S4/53S4K/53S4U

## 2-2-5. INSTALL A CHASSIS ASSY

② CRT bracket
Gradually pull out the CRT bracket toward arrow mark **B** while keeping the balance.

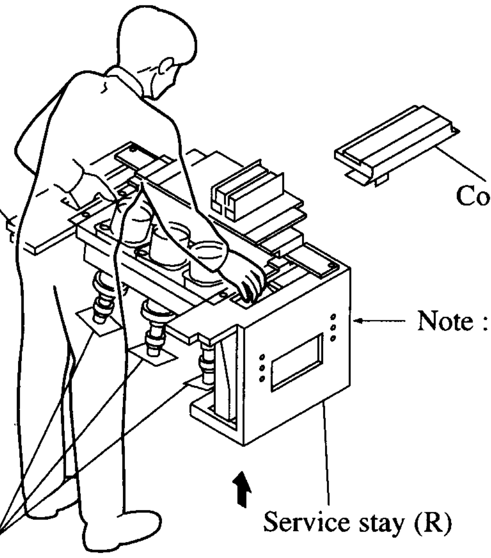
* Be careful not to get the chassis holder caught by the harness or CR, CG or CB boards.


③ Four screws (+PSW M4X30)
B
A

① Chassis assy
Gradually pull out the chassis assy toward arrow mark **A** .

* Gradually move the chassis assy and the CRT bracked by turns.

## 2-2-6. CARRY BACK SERVICE STAY ASSY


Service stay (L)
Control panel
Service stay (R)
CR, CG, CB board

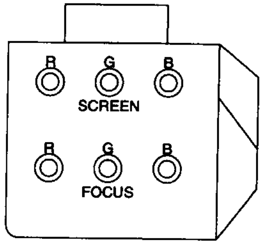
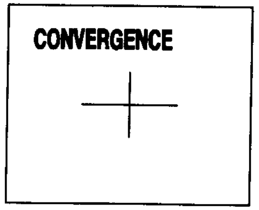
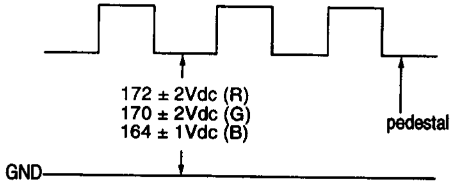
Note : Never hold this part!
Or the chassis assy may fall of.

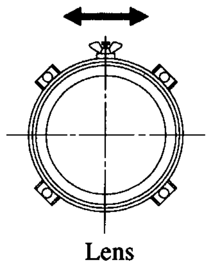
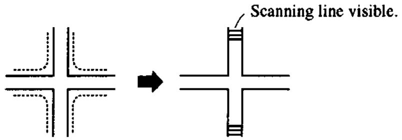
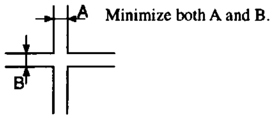
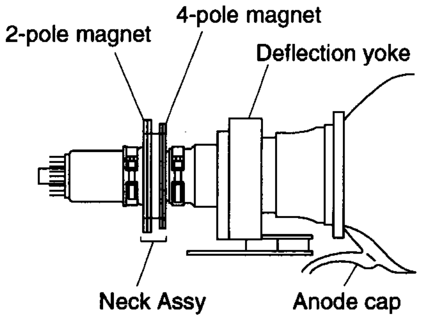
* When carrying the chassis assy, be careful not to touch the CR, CG or CB boards with your legs.

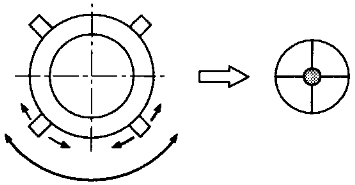
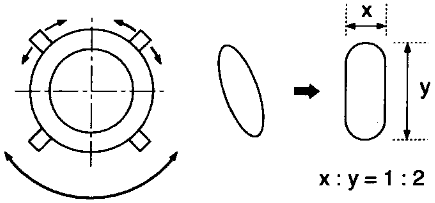
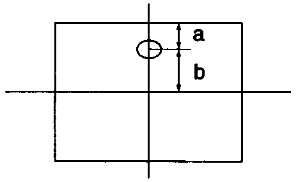
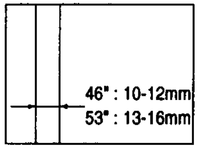
* Even with 2 servicemen, be sure to put your hands into the grooves on the top of service stays (L) and (R) to carry the chassis assy.

* To hold the chassis assy, put your hands into the grooves on the top of service stays (L) and (R).

# SECTION 3
## SET-UP ADJUSTMENTS

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **SCREEN VOLTAGE ADJUSTMENT (ROUGH ALIGNMENT)**<br>1. Turn the red VR on the FOCUS block all the way to the left and then gradually turn it to the right until the point where you can see the retrace line.<br>2. Next gradually turn it to the left to the position where the retrace line disappears. | Monoscope Pattern | | PICTURE<br>.......... minimum<br>BRIGHTNESS<br>........... 50%<br>SCREEN (G2) |  <br>FOCUS block |
| **FOCUS LENS ADJUSTMENT**<br>1. Loosen the lens screw.<br>2. Set in service mode.<br>3. Use VSP on the service mode menu to show only the green colour.<br>4. Press the Commander Menu button and select FEATURES and CONVERGENCE to display the test signal on the screen.<br>5. Rotate the green lens and align with the optimal focus point from the test signal.<br>6. Use RRH from the service mode menu to set to green and red.<br>7. Disply the test signal and rotate the red lens to obtain the optimum focus at the point where the red and green spots overlap.<br>8. Use RBH from the service mode menu to set to red and blue.<br>9. Disply the test signal and rotate the blue lens to obtain the optimum focus at the point where the blue and red spots overlap.<br>10. Tighten the lens screw. | | | |  |
| **SCREEN (G2) ADJUSTMENT**<br>1. Select VIDEO mode without signals.<br>2. Connect an oscilloscope to the TP7103(KR), TP7203(KG) and TP7303(KB) of CR board, CG board and CB board.<br>3. Adjust R to 172±2Vdc<br>G to 170±2Vdc<br>B to 164±1Vdc<br>by rotating screen VR on the focus block. | | | |  172 ± 2Vdc (R)<br>170 ± 2Vdc (G)<br>164 ± 1Vdc (B)<br>pedestal<br>GND |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **FOCUS VR ADJUSTMENT**<br>1. Set in service mode.<br>2. Use VSP on the service mode menu to show only the green colour.<br>3. Press the Commander Menu button (convergence) and output the test signal.<br>4. Rotate the green VR on the FOCUS block and align to obtain the optimal focus point.<br>5. Use RRH from the service mode menu to set to green and red.<br>6. Disply the test signal and rotate the red VR to obtain the optimum focus at the point where the red and green spots overlap.<br>7. Use RBH from the service mode menu to set to red and blue.<br>8. Disply the test signal and rotate the blue VR aligning to obtain the optimum focus at the point where the blue and green spots overlap. | | | |  <br> <br> |
| **DEFLECTION YOKE TILT ADJUSTMENT**<br>1. Set in service mode.<br>2. Set to receive the monoscope signal.<br>3. Use VSP on the service mode menu to show only the green colour.<br>4. Loosen the deflection yoke set screw and align the tilt of the deflection yoke so that the bars at the centre of the monoscope pattern are horizontal.<br>5. After aligning the deflection yoke, fasten it securely to the funnel-shaped portion (neck) of the CRT.<br>6. The tilt of the deflection yoke for red is aligned with RRH on the service mode menu, and the tilt on the deflection yoke for blue is aligned with RBH on the service menu, is aligned the same as was done for green. | Monoscope pattern | | |  2-pole magnet<br>4-pole magnet<br>Deflection yoke<br>Neck Assy<br>Anode cap |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **2-POLE MAGNET ADJUSTMENT**<br>1. Set in service mode.<br>2. Set to receive the dot pattern signal.<br>3. Place the caps on the red and blue lens so that only the green colour is showing.<br>4. Turn the green VR on the focus block to the right and set to overfocus to enlarge the spot.<br>5. Now align the 2-Pole Magnet so that the enlarged spot is in the center of the Just Focus spot.<br>6. Align the green focus VR and set for just (precise) focus.<br>7. Perform the same alignment for red and blue. | Dot pattern | | 2-pole magnet | Use the center dot<br> |
| **4-POLE MAGNET ADJUSTMENT**<br>1. Set in service mode.<br>2. Set to receive the dot pattern signal.<br>3. Place the caps on the red and blue lens so that only the green colour is showing.<br>4. Turn the green VR on the focus block to the left and set to underfocus to enlarge the spot.<br>5. Now align the 4-Pole Magnet so that the enlarged spot becomes a perfect circle. | Dot pattern | | 4-pole magnet | Use the center dot<br><br> <br>x : y = 1 : 2 |
| **DEFOCUS ADJUSTMENT**<br>1. Receive the crosshatch signal.<br>2. Adjust the FOCUS knob so that the crosshatch pattern vertical line width is as in the figure on the right.<br>3. Blue only defocus Adjustment. | Crosshatch pattern | | FOCUS VR<br>• RED<br>• GREEN<br>• BLUE | • **Focus adjustment point**<br><br> <br>a : b=1 : 4<br><br> <br>without flare |

# ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

By using Remote Commander (RM-831),all circuit adjustments can be made.

**NOTE : Test Equipment Required.**

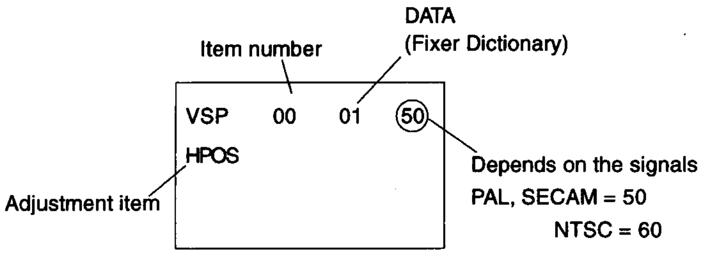
1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio oscillator

## 1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

### SERVICE MODE PROCEDURE

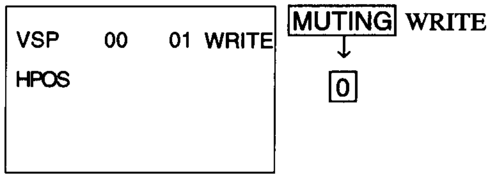
1. Standby mode. (Power off)
2. DISPLAY → 5 → VOL (+) → TV POWER on the Remote Commander.
   ( ⊞ → 5 → ◢ → ▢ ) (Press each button within a second.)

### SERVICE MODE ADJUSTMENT



3. The CRT displays the item being adjusted.
4. Press 1 or 4 on the Remote Commander to select the item.
5. Press 3 or 6 on the Remote Commander to change the data.
6. If you want to recover the latest values press 7 then 0 to read the memory.
7. Press MUTING then 0 to write into memory.

### SERVICE ADJUSTMENT MODE MEMORY



8. Press 8 then 0 on the Remote Commander to initialize.
9. Turn set off and on to exit.

## 2. AFTER IC401 (NON VOLATILE MEMORY) REPLACEMENT

1. Enter to Service Mode.
2. Press 5 and 0 of the commander to initialize data.
3. Adjust standard data to call each item number with 3 and 6 of the commander.
   Write the data per each item number ( MUTING + 0 )
4. Select CP2 items menu and respectively set the data with 3 and 6 of the commander.

| | Item number | Adjustment item | AEP | UK | K (OIRT) |
|---|---|---|---|---|---|
| CP2 | 03 | B/G | 1 | 1 | 1 |
| | 04 | I | 1 | 1 | 1 |
| | 05 | IRE | 0 | 1 | 0 |
| | 06 | D/K | 1 | 0 | 1 |
| | 07 | AUS | 0 | 0 | 0 |
| | 08 | L | 1 | 1 | 1 |

Press MUTING + 0 of the commander to write the data.

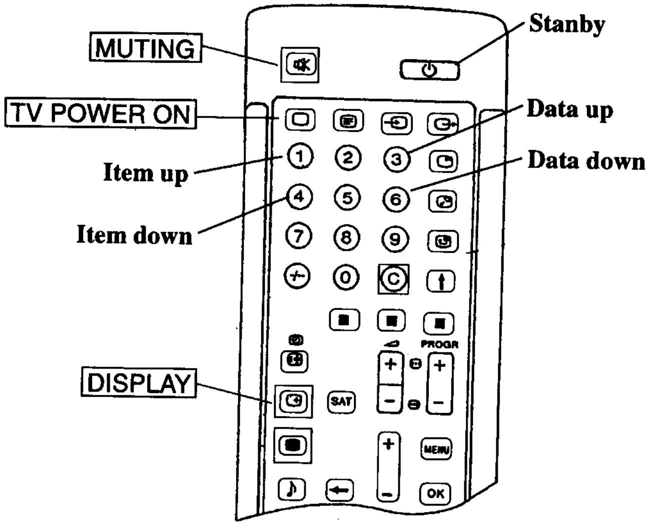
5. Select item CSET of TXT menu and set the data with 3 and 6 of the commander.

| | | | |
|---|---|---|---|
| TXT | 14 | CSET | 3 : West (AEP/UK), 5 : EAST(K)<br>6 : GREEK |

Press MUTING + 0 of the commander to write the data.

6. Press 8 and 0 of the commander to make the user control data standard.

## 3. ADJUST BUTTONS AND INDICATOR



RM-831

## 4. SERVICE MODE LIST

### VSP

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| VSP | 00 | HPOS | 0 ~ 63 | 51 | H-SHIFT | CXD2018Q |
| | 01 | VSIZ | 0 ~ 63 | 24 | V-SIZE | |
| | 02 | VPOS | 0 ~ 63 | 24 | V-SHIFT | |
| | 03 | VSCO | 0 ~ 15 | 8 | S-CORRECTION | |
| | 04 | VLIN | 0 ~ 15 | 10 | V-LINEARITY | |
| | 05 | HSIZ | 0 ~ 63 | 19 | H-SIZE | |
| | 06 | HIPN | 0 ~ 63 | 38 | PIN-AMP | |
| | 07 | HKEY | 0 ~ 31 | 9 | TILT | |
| | 08 | UPCP | 0 ~ 15 | 7 | UPPER CORNER PIN | |
| | 09 | LOCP | 0 ~ 15 | 10 | LOWER CORNER PIN | |
| | 10 | HBOW | 0 ~ 15 | 7 | V-BOW | |
| | 11 | HSKE | 0 ~ 15 | 9 | V-ANGLE | |

### DP

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| R GH | 00 | CENT | –127 ~ +128 | 20 | GREEN. H CENTER | CXP85112B-613S |
| | 01 | SKEW | –127 ~ +128 | 0 | GREEN. H SKEW | |
| | 02 | BOW | –127 ~ +128 | 0 | GREEN. H BOW | |
| | 03 | 4BOW | –127 ~ +128 | 0 | GREEN. H 4th BOW | |
| | 04 | SIZE | –127 ~ +128 | 0 | GREEN. H SIZE | |
| | 05 | LIN | –127 ~ +128 | 7 | GREEN. H LINEARITY | |
| | 06 | MSIZ | –127 ~ +128 | –5 | GREEN. H MIDDLE SIZE | |
| | 07 | MLIN | –127 ~ +128 | –1 | GREEN. H MIDDLE LINEARITY | |
| | 08 | KEY | –127 ~ +128 | 0 | GREEN. H KEY | |
| | 09 | SSKW | –127 ~ +128 | 0 | GREEN. H SUB SKEW | |
| | 10 | MPIN | –127 ~ +128 | 30 | GREEN. H MIDDLE PIN | |
| | 11 | PIN | –127 ~ +128 | 0 | GREEN. H PIN | |
| | 12 | SBOW | –127 ~ +128 | 0 | GREEN. H SUB BOW | |
| | 13 | MBOW | –127 ~ +128 | 0 | GREEN. H MIDDLE BOW | |
| | 14 | 4PIN | –127 ~ +128 | –3 | GREEN. H 4th PIN | |
| | 15 | 4SBOW | –127 ~ +128 | 0 | GREEN. H 4th SUB BOW | |
| R GV | 00 | CENT | –127 ~ +128 | 0 | GREEN. V CENTER | CXP85112B-613S |
| | 01 | SKEW | –127 ~ +128 | 0 | GREEN. V SKEW | |
| | 02 | BOW | –127 ~ +128 | 2 | GREEN. V BOW | |
| | 03 | SIZE | –127 ~ +128 | 0 | GREEN. V SIZE | |
| | 04 | LIN | –127 ~ +128 | 4 | GREEN. V LINEARITY | |
| | 05 | MSIZ | –127 ~ +128 | 0 | GREEN. V MIDDLE SIZE | |
| | 06 | MKEY | –127 ~ +128 | 0 | GREEN. V MIDDLE KEY | |
| | 07 | KEY | –127 ~ +128 | 10 | GREEN. V KEY | |
| | 08 | SSKW | –127 ~ +128 | 0 | GREEN. V SUB SKEW | |
| | 09 | MPIN | –127 ~ +128 | 25 | GREEN. V MIDDLE PIN | |
| | 10 | PIN | –127 ~ +128 | –20 | GREEN. V PIN | |
| | 11 | SBOW | –127 ~ +128 | –2 | GREEN. V SUB BOW | |
| | 12 | WAVE | –127 ~ +128 | 0 | GREEN. V WAVE | |
| | 13 | 4PIN | –127 ~ +128 | 10 | GREEN. V 4th PIN | |
| R RH | 00 | CENT | –127 ~ +128 | –30 | RED. H CENTER | CXP85112B-613S |
| | 01 | SKEW | –127 ~ +128 | 0 | RED. H SKEW | |
| | 02 | BOW | –127 ~ +128 | 0 | RED. H BOW | |
| | 03 | 4BOW | –127 ~ +128 | 0 | RED. H 4th BOW | |
| | 04 | SIZE | –127 ~ +128 | 0 | RED. H SIZE | |
| | 05 | LIN | –127 ~ +128 | –10 | RED. H LINEARITY | |
| | 06 | MSIZ | –127 ~ +128 | –5 | RED. H MIDDLE SIZE | |
| | 07 | MLIN | –127 ~ +128 | –5 | RED. H MIDDLE LINEARTIY | |
| | 08 | KEY | –127 ~ +128 | –5 | RED. H KEY | |
| | 09 | SSKW | –127 ~ +128 | 0 | RED. H SUB SKEW | |
| | 10 | MPIN | –127 ~ +128 | 30 | RED. H MIDDLE PIN | |
| | 11 | PIN | –127 ~ +128 | 10 | RED. H PIN | |

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| RRH | 12 | SBOW | –127 ~ +128 | 30 | RED. H SUB BOW | CXP85112B-613S |
| | 13 | MBOW | –127 ~ +128 | 3 | RED. H MIDDLE BOW | |
| | 14 | 4PIN | –127 ~ +128 | –3 | RED. H 4th PIN | |
| | 15 | 4SBOW | –127 ~ +128 | –2 | RED. H 4th SUB BOW | |
| R RV | 00 | CENT | –127 ~ +128 | 10 | RED. V CENTER | CXP85112B-613S |
| | 01 | SKEW | –127 ~ +128 | 0 | RED. V SKEW | |
| | 02 | BOW | –127 ~ +128 | 2 | RED. V BOW | |
| | 03 | SIZE | –127 ~ +128 | 0 | RED. V SIZE | |
| | 04 | LIN | –127 ~ +128 | 0 | RED. V LINEARITY | |
| | 05 | MSIZ | –127 ~ +128 | 0 | RED. V MIDDLE SIZE | |
| | 06 | MKEY | –127 ~ +128 | 10 | RED. V MIDDLE KEY | |
| | 07 | KEY | –127 ~ +128 | 10 | RED. V KEY | |
| | 08 | SSKW | –127 ~ +128 | 0 | RED. V SUB SKEW | |
| | 09 | MPIN | –127 ~ +128 | 25 | RED. V MIDDLE PIN | |
| | 10 | PIN | –127 ~ +128 | 5 | RED. V PIN | |
| | 11 | SBOW | –127 ~ +128 | –2 | RED. V SUB BOW | |
| | 12 | WAVE | –127 ~ +128 | 15 | RED. V WAVE | |
| | 13 | 4PIN | –127 ~ +128 | 10 | RED. V 4th PIN | |
| R BH | 00 | BSEL | 0 / 1 | 0 | RESISTRATION µ CON BSEL | CXP85112B-613S |
| | 01 | CENT | –127~ +128 | 30 | BLUE. H CENTER | |
| | 02 | SKEW | –127 ~ +128 | 0 | BLUE. H SKEW | |
| | 03 | BOW | –127 ~ +128 | 0 | BLUE. H BOW | |
| | 04 | 4BOW | –127 ~ +128 | 0 | BLUE. H 4th BOW | |
| | 05 | SIZE | –127 ~ +128 | –1 | BLUE. H SIZE | |
| | 06 | LIN | –127 ~ +128 | –10 | BLUE. H LINEARITY | |
| | 07 | MSIZ | –127 ~ +128 | –5 | BLUE. H MIDDLE SIZE | |
| | 08 | MLIN | –127 ~ +128 | 5 | BLUE. H MIDDLE LINEARTIY | |
| | 09 | KEY | –127 ~ +128 | 0 | BLUE. H KEY | |
| | 10 | SSKW | –127 ~ +128 | 0 | BLUE. H SUB SKEW | |
| | 11 | MPIN | –127 ~ +128 | 30 | BLUE. H MIDDLE PIN | |
| | 12 | PIN | –127 ~ +128 | 0 | BLUE. H PIN | |
| | 13 | SBOW | –127 ~ +128 | –30 | BLUE. H SUB BOW | |
| | 14 | MBOW | –127 ~ +128 | –3 | BLUE. H MIDDLE BOW | |
| | 15 | 4PIN | –127 ~ +128 | –3 | BLUE. H 4th PIN | |
| | 16 | 4SBOW | –127 ~ +128 | 2 | BLUE. H 4th SUB BOW | |
| R BV | 00 | CENT | –127 ~ +128 | 0 | BLUE. V CENTER | CXP85112B-613S |
| | 01 | SKEW | –127 ~ +128 | 0 | BLUE. V SKEW | |
| | 02 | BOW | –127 ~ +128 | 2 | BLUE. V BOW | |
| | 03 | SIZE | –127 ~ +128 | –10 | BLUE. V SIZE | |
| | 04 | LIN | –127 ~ +128 | 0 | BLUE. V LINEARITY | |
| | 05 | MSIZ | –127 ~ +128 | 0 | BLUE. V MIDDLE SIZE | |
| | 06 | MKEY | –127 ~ +128 | –10 | BLUE. V MIDDLE KEY | |

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| R BV | 07 | KEY | –127 ~ +128 | 0 | BLUE. V KEY | CXP85112B-613S |
| | 08 | SSKW | –127 ~ +128 | 0 | BLUE. V SUB SKEW | |
| | 09 | MPIN | –127 ~ +128 | 25 | BLUE. V MIDDLE PIN | |
| | 10 | PIN | –127 ~ +128 | 0 | BLUE. V PIN | |
| | 11 | SBOW | –127 ~ +128 | 10 | BLUE. V SUB BOW | |
| | 12 | WAVE | –127 ~ +128 | –15 | BLUE. V 3th WAVE | |
| | 13 | 4PIN | –127 ~ +128 | 10 | BLUE. V 4th PIN | |

## D/A

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| D/A | 00 | BKU | 0 ~ 63 | 63 | V.BLK UP-SIDE | CXA1315PM |
| | 01 | BKD | 0 ~ 63 | 0 | V.BLK DOWN-SIDE | |

## MCD

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| MCD | 00 | MHUE | 0 ~ 31 | 15 | SUB HUE OF MAIN PICTURE | TDA9141 |
| | 01 | YDLT | 0 ~ 15 | 7 | Y DELAY | TDA9143 |

## SCD

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| SCD | 00 | SHUE | 0 ~ 31 | 15 | SUB HUE OF SUB PICTURE | TDA9160 |

## RGB

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| RGB | 00 | SCOL | 0 ~15 | 4 | SUB COLOUR | TDA4780 |
| | 01 | SBRT | 0 ~ 63 | 27 | SUB BRIGHT | |
| | 02 | RAMP | 0 ~ 63 | 31 | RED GAIN | |
| | 03 | GAMP | 0 ~ 63 | 31 | GREEN GAIN | |
| | 04 | BAMP | 0 ~ 63 | 31 | BLUE GAIN | |
| | 05 | RCUT | 0 ~ 63 | 31 | RED LEVEL REFERENCE | |
| | 06 | GCUT | 0 ~ 63 | 31 | GREEN LEVEL REFERENCE | |
| | 07 | BCUT | 0 ~ 63 | 31 | BLUE LEVEL REFERENCE | |
| | 08 | PDL | 0 ~ 63 | 31 | PEAK DRIVE LIMITER | |
| | 09 | GNMA | 0 ~ 63 | 0 | GAMMA | |
| | 10 | ADBL | 0 / 1 | 0 | ADAPTIVE BLACK | |
| | 11 | RELC | 0 / 1 | 1 | RELATIVE TO CUT-OFF | |
| | 12 | TCPL | 0 / 1 | 1 | TIME CONSTANT PEAK DRIVE LIMITER | |

## PIP

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| PIP | 00 | RDV | 0 ~ 15 | 8 | V READ DELAY | SDA9188-3X |
| | 01 | RDH | 0 ~ 63 | 16 | H READ DELAY | |
| | 02 | FRY | 0 ~ 15 | 3 | BRIGHTNESS OF THE BORDER FRAME | |
| | 03 | 9V50 | 0 ~ 7 | 3 | MULTI PIP V 50Hz | |
| | 04 | 9H50 | 0 ~ 7 | 2 | MULTI PIP H 50Hz | |
| | 05 | 9V60 | 0 ~ 7 | 2 | MULTI PIP V 60Hz | |
| | 06 | 9H60 | 0 ~ 7 | 3 | MULTI PIP H 60Hz | |
| | 07 | SCON | 0 ~ 15 | 8 | CONTRAST D/A CONVERTER | |

## IPQ

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| IPQ | 00 | CIN | 0/ 1 | 0 | CINE MODE (ABAB RASTER) OFF/ON | 83C652 |
| | 01 | 107 | 0/ 1 | 1 | MEMORY CONFIGURATION TMS4C2972 SWITCH | |
| | 02 | LFR | 0/ 1 | 1 | LINE FLICKER REDUCTION MODE OFF/ON | |
| | 03 | HWE | 0 ~ 15 | 15 | HWE 1 LINE DEALY OFF SET TO DEFAULT | |
| | 04 | NR | 0 ~ 3 | 2 | NOISE REDUCTION LEVEL | |
| | 05 | Y-V | 0 ~ 255 | 60 | Y-VALUE (BRIGHTNESS) | |
| | 06 | UV-V | 0 ~ 255 | 0 | UV-VALUE (COLOUR) | |
| | 07 | PEAK | 0 ~ 127 | 10 | PEAKING | |
| | 08 | CTI | 0 ~ 127 | 64 | CTI LEVEL DATA | |
| | 09 | VWE | 0 ~ 63 | 31 | VWE1 DELAY | |

## TXT

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| TXT | 00 | TXH | 0 ~ 255 | 9 | H START POSITION | TPU3040/TPU3041 |
| | 01 | TXV | 0 ~ 63 | 44 | V START POSITION | |
| | 02 | VSP | 0 ~ 255 | 59 | V STOP POSITION | |
| | 03 | BSP | 0 ~ 255 | 61 | BLANKING STOP | |
| | 04 | BST | 0 ~ 255 | 53 | BLANKING START | |
| | 05 | QSF | 0 ~ 31 | 1 | ACQUSITION SOFT SLICER | |
| | 06 | A7F | 0 ~ 255 | 10 | VALUE OF ADRESS 007FH | |
| | 07 | QDT | 0 ~ 63 | 13 | ACQUSITION DATA SLICER | |
| | 08 | CST | 0 ~ 255 | 0 | CLAMPING START | |
| | 09 | CSP | 0 ~ 255 | 80 | CLAMPING STOP | |
| | 10 | LMT | 0/1 | 0 | LIMIT SLICER ADAPTION SW | |
| | 11 | GMX | 0 ~ 255 | 31 | GAIN MAX | |
| | 12 | FMX | 0 ~ 255 | 31 | FILTER MAX | |
| | 13 | TVER | 0 ~3 | 3 | TPU VERSION (TC2023) | |
| | 14 | CSET | 0 ~7 | 3 | TELETEXT LANGUAGE SETTING<br>3: WEST (AEP/UK)<br>5: EAST (K), 6: GREEK | |

## AP

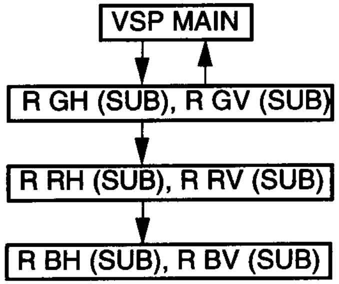
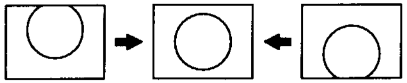
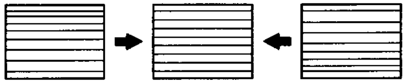
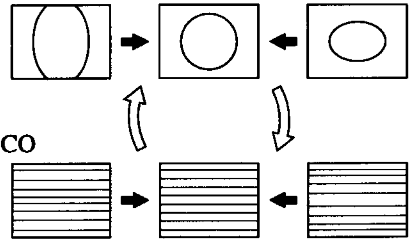
| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| AP | 00 | FAW | 0 ~ 255 | 10 | NICAM FAW THRESHOLD | MSP3410 |
| | 01 | CTM | 0 ~ 255 | 4 | NICAM ERROR BIT THRESHOLD(MONO→NICAM) | |
| | 02 | CTN | 0 ~ 255 | 80 | NICAM ERROR BIT THRESHOLD(NICAM→MONO) | |
| | 03 | WGO | 0 ~ 255 | 10 | WEST GERMAN STEREO LOW THRESHOLD | |
| | 04 | WGS | 0 ~ 255 | 21 | WEST GERMAN STEREO HIGH THRESHOLD | |
| | 05 | WGT | 0 ~ 255 | 80 | WEST GERMAN STEREO LOW 2 THRESHOLD | |
| | 06 | WGB | 0 ~ 255 | 250 | WEST GERMAN STEREO HIGH 2 THRESHOLD | |
| | 07 | ACG | 0/ 1 | 1 | AGC AUTO / CONSTANT SWITCH | |
| | 08 | CDB | 0 ~ 63 | 30 | AGC GAIN VALUE AT CONSTANT MODE | |
| | 09 | FMP | 0 ~ 127 | 26 | FM MONO PRESCALE | |
| | 10 | WGP | 0 ~ 127 | 26 | WEST GERMAN STEREO PRESCALE | |
| | 11 | INIP | 0 ~ 127 | 127 | I NICAM PRESCALE | |
| | 12 | BNIP | 0 ~ 127 | 72 | B/G NICAM PRESCALE | |
| | 13 | LNIP | 0 ~ 127 | 81 | L NICAM PRESCALE | |
| | 14 | DNIP | 0 ~ 127 | 72 | D/K NICAM PRESCALE | |
| | 15 | CRM | 0/ 1 | 0 | CARRIER MUTE FUNCTION | |
| | 16 | ACO | 0/ 1 | 1 | AUDIO CLOCK OUT OFF/ON | |
| | 17 | WAC | 0 ~ 15 | 1 | WEST GERMAN STEREO JUDGE CONSTANT | |

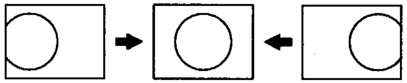
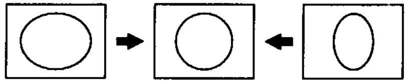
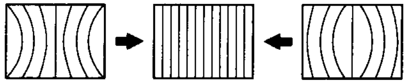
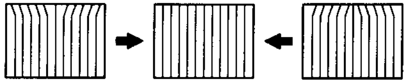
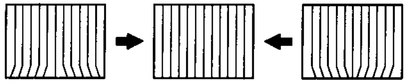
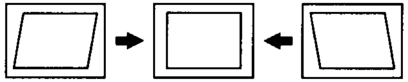
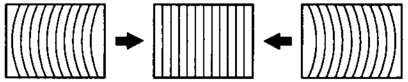
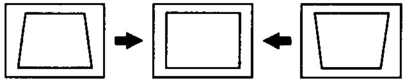
## CPU

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| CPU | 00 | OSH | 0 ~ 63 | 18 | OSD H POSITION | CXP85460 |
| | 01 | ODL | 0 ~ 256 | 15 | POWER ON DELAY | |
| | 02 | FTZP | 0/ 1 | 1 | FTZ MUTE PRIORITY | |
| | 03 | RGBP | 0/ 1 | 0 | RGB MODE PRIORITY | |
| | 04 | NICP | 0/ 1 | 1 | NICAM PRIORITY | |
| | 05 | B/G | 0/ 1 | 1 | TV SYSTEM B/G OFF/ON | |
| | 06 | I | 0/ 1 | 1 | TV SYSTEM I OFF/ON | |
| | 07 | IRE | 0/ 1 | 0 | TV SYSTEM IRE OFF/ON | |
| | 08 | D/K | 0/ 1 | 1 | TV SYSTEM D/K OFF/ON | |
| | 09 | AUS | 0/ 1 | 0 | TV SYSTEM AUS OFF/ON | |
| | 10 | L | 0/ 1 | 1 | TV SYSTEM L OFF/ON | |
| | 11 | MYC 2 | 0/ 1 | 0 | YC2/AV2 PRIORITY | |
| | 12 | MYC 4 | 0/ 1 | 0 | YC4/AV4 PRIORITY | |

## IP 2

| | Item number | Adjustment item | Data range | Initial data | Note | Device |
|---|---|---|---|---|---|---|
| IP2 | 00 | BOX | 0/ 1 | 0 | BOX FUNCTION SWITCH | TDA9160 |
| | 01 | SCF | 0 ~ 3 | 0 | SCREEN FADE FUNCTION | |
| | 02 | SPS | 0 ~ 3 | 0 | SPLIT SCREEN FUNCTION | |
| | 03 | PHAS | 0/ 1 | 0 | PHASE FLAG | |
| | 04 | AXIS | 0/ 1 | 1 | RGB AXIS | |
| | 05 | HSFT | 0 ~ 31 | 10 | H. SHIFT ADJUSTMENT | |
| | 06 | SFTE | 0/ 1 | 1 | PICTURE SHIFT ENABLE | |
| | 07 | SFTF | 0/ 1 | 0 | PICTURE SHIFT FACTORY CHECK | |
| | 08 | 3BCN | 0 ~ 255 | 10 | BINARY BIT CHECK FOR TELETEXT | |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **CONVERGENCE ADJUSTMENT**<br>● When replacing the deflection yoke, always perform "DEFLECTION YOKE TILT ADJUSTMENT" before adjusting the convergence.<br>Adjustment procedure<br><br>VSP MAIN<br>R GH (SUB), R GV (SUB)<br>R RH (SUB), R RV (SUB)<br>R BH (SUB), R BV (SUB) | | | | |
| **• GREEN REGISTRATION ADJUSTMENT**<br>• V-SHIFT adjustment | Monoscope pattern or Crosshatch pattern | | <VSP MENU><br>VSP VPOS | VPOS<br> |
| • V-LINEARITY adjustment | | | VSP VLIN | VLIN<br> |
| • V-SIZE, V-CORRECTION adjustment<br>While tracking, adjust so that the lattice intervals for VSIZ and VSCO are equal. | | | VSP VSIZ<br>VSP VSCO | VSIZ<br><br> |

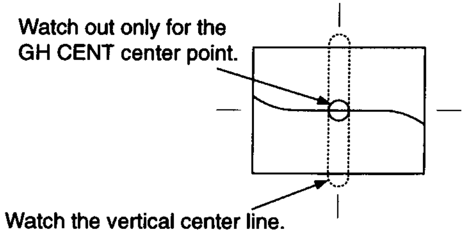
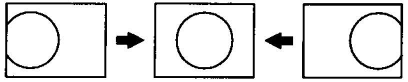
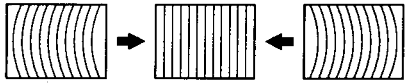
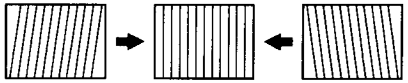
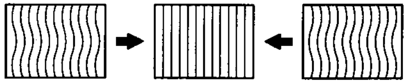
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| • H-SHIFT adjustment | | | VSP HPOS | HPOS<br> |
| • H-SIZE adjustment<br>Finely adjust with SUB MSIZ. | | | VSP HSIZ | HSIZ<br> |
| • PIN-AMP adjustment<br>Finely adjust with SUB MPIN. | | | VSP HPIN | HPIN<br> |
| • UPPER/LOWER-CORNER PIN adjustment<br>Correct the screens top and bottom bow line.<br>However, if this adjustment is overdone, distortion may occur with the PIN-AMP adjustment that can not be re-adjusted.<br>Note : The PIN-AMP adjusts the overall screen from top to bottom, but the UPPER/LOWER-CORNER PIN adjustments have large movement in the top and bottom sections, so be careful. | | | VSP UPCP<br>VSP LOCP | UPCP<br><br>LOCP<br> |
| • V-ANGLE, V-BOW adjustment<br>Correct the tilt and bow of the vertical line at the center of the screen. | | | VSP HSKE<br>VSP HBOW | HSKE<br><br>HBOW<br> |
| • TILT adjustment<br>Adjust to eliminate the tilt of one of the two vertical lines at both ends of the screen. | | | VSP HKEY | HKEY<br> |

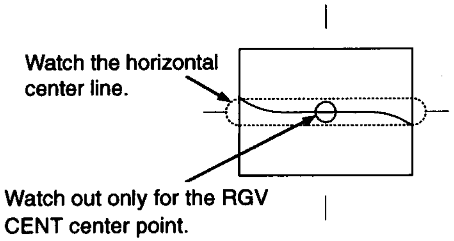
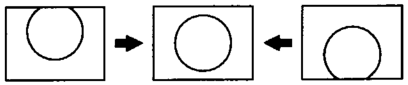
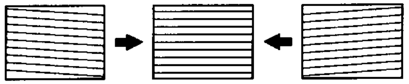
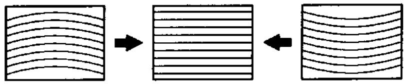
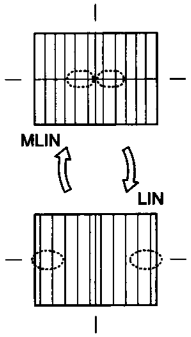
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|

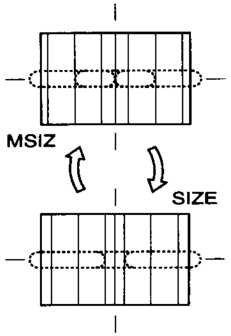
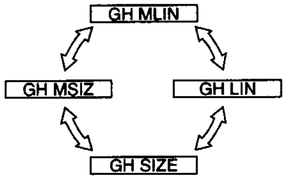
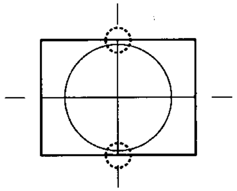
## CONVERGENCE SUB ADJUSTMENT

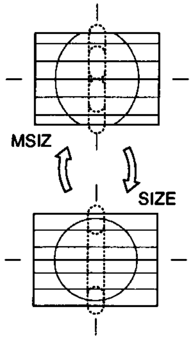
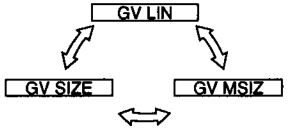
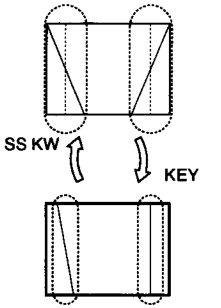
Adjustment O : Yes – : No

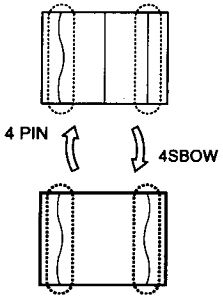
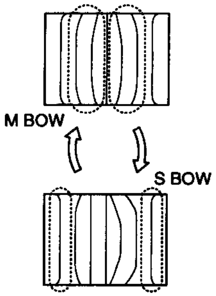
| Display | Adjustment item | Adjustment type | | | | | |
|---|---|---|---|---|---|---|---|
| | | RGH | RGV | RRH | RRV | RBH | RBV |
| BSEL | COL SELECT | – | – | – | – | O | – |
| CENT | CENT | O | O | O | O | O | O |
| SKEW | SKEW | O | O | O | O | O | O |
| BOW | BOW | O | O | O | O | O | O |
| 4BOW | 4TH BOW | O | – | O | – | O | – |
| SIZE | SIZE | O | O | O | O | O | O |
| LIN | LIN | O | O | O | O | O | O |
| MSIZ | MID SIZE | O | O | O | O | O | O |
| MLIN | MID LIN | O | O | O | – | O | – |
| MKEY | MID KEY | – | O | – | O | – | O |
| KEY | KEY | O | O | O | O | O | O |
| SSKW | SUB SKEW | O | O | O | O | O | O |
| M PIN | MID PIN | O | O | O | O | O | O |
| PIN | PIN | O | O | O | O | O | O |
| SBOW | SUB BOW | O | O | O | O | O | O |
| WAVE | WAVE | – | O | – | O | – | O |
| MBOW | MID BOW | O | – | O | – | O | – |
| 4PIN | 4TH PIN | O | O | O | O | O | O |
| 4SBOW | 4TH SUB BOW | O | – | O | – | O | – |

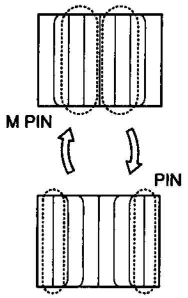
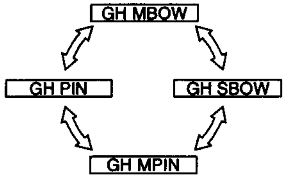
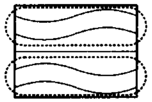
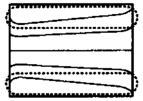
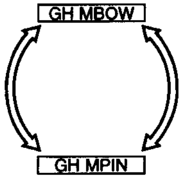
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **• GREEN SUB ADJUSTMENT**<br>**SCREEN CENTER SECTION GREEN VERTICAL LINE ADJUSTMENT**<br>1. Finely adjust with RGH CENT, RGH BOW, RGH SKEW. Adjust by watching out for the RGH CENT screen center section. | | | <RGH MENU><br>RGH CENT<br>RGH BOW<br>RGH SKEW |  Watch out only for the GH CENT center point.<br>Watch the vertical center line.<br>RGH CENT<br><br>RGH BOW<br><br>RGH SKEW<br> |
| 2. RGH 4TH BOW adjustment<br>Correct the corner distortion that could not be adjusted away with the RGH 4BOW adjustment. | | | RGH 4BOW | RGH 4BOW<br> |

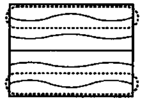
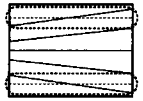
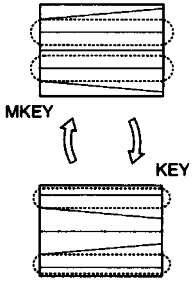
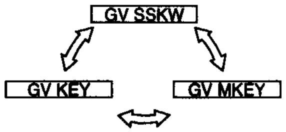
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **SCREEN CENTER SECTION GREEN HORIZONTAL LINE ADJUSTMENT**<br>1. Finely adjust the center position of the vertical line at the center of the screen with RGV CENT. | | | <RGV MENU><br>RGV CENT |  Watch the horizontal center line.<br>Watch out only for the RGV CENT center point.<br>RGV CENT<br> |
| 2. Correct the tilt and bow of the horizontal line at the center of the screen with RGV SKEW and RGV BOW. | | | RGV SKEW<br>RGV BOW | RGV SKEW<br><br>RGV BOW<br> |
| **GREEN SIZE AND LINEARITY ADJUSTMENT**<br>1. Balance the sizes at both sides of the center section of the screen with RGH MLIN.<br>2. Balance the sizes on both end sections of the screen with RGH LIN.<br>3. While tracking, adjust with RGH MLIN and RGH LIN so that the sizes of the horizontal line at the center of the screen are symmetrical left and right. | | | <RGH MENU><br>RGH MLIN<br>RGH LIN |  |

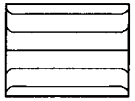
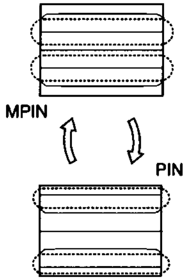
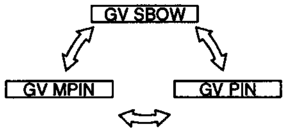
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN HORIZONTAL SIZE ADJUSTMENT**<br>1. Adjust with RGH MSIZE so that the sizes of both ends and of both sides of the center section of the screen are equal.<br>2. Adjust with RGH SIZE so that the horizontal sizes of both ends and of both sides of the center section of the screen are equal.<br>3. While tracking, adjust with RGH MSIZ and RGH SIZE so that the lattice intervals for the horizontal line section of the center section of the screen are equal and so that the horizontal size is the prescribed value.<br>4. If M LIN is changed when the RGH MSIZ and RGH SIZE adjustment is complete, adjust again while tracking.<br>●With just the H SIZE adjustment in MAIN, if there is no need to adjust RGH SIZE in SUB this can save power. | | | <RGH MENU><br>RGH MSIZ<br>RGH SIZE |  <br> |
| **GREEN VERTICAL LINEARITY ADJUSTMENT**<br>1. Adjust RGV LIN so that the vertical lines at the top and bottom of the screen are symmetrical. | | | <RGV MENU><br>RGV LIN |  |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN VERTICAL SIZE ADJUSTMENT**<br>1. Adjust with RGV MSIZE so that the sizes for the top and bottom sections of the screen and for both sides of the center section of the screen are equal.<br>2. Set the vertical size to the prescribed value with RGV SIZE.<br>3. Adjust RGV MSIZ and RGV SIZE watching the vertical line at the center section of the screen.<br>4. While tracking, adjust with RGV MSIZ and RGV SIZE so that the lattice intervals for the vertical line section of the center section of the screen are equal and so that the vertical size is the regulation value.<br>5. If RGV LIN is out of place when the RGV MSIZ and RGV SIZE adjustment is complete, adjust again while tracking.<br>●If there is no need to adjust RGV SIZE in SUB with just the V SIZE adjustment in MAIN, this can save power. | | | <RGV MENU><br>RGV MSIZ<br>RGV SIZE |  <br> |
| **GREEN HORIZONTAL TRAPEZOIDAL DISTORTION ADJUSTMENT**<br>1. Adjust with RGH SSKW so that the tilt of the vertical lines at both ends of the screen is symmetrical left and right.<br>2. Adjust with RGH KEY so that there is no tilt in the vertical lines at both ends of the screen.<br>3. If there is a tilt on either the left or right after the RGH KEY adjustment, adjust while tracking. | | | <RGV MENU><br>RGH SSKW<br>RGH KEY |  |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN HORIZONTAL QUATERNARY ADJUSTMENT**<br>1. Correct the quaternary distortion with RGH 4PIN.<br>2. While balancing, correct the quaternary distortion of both end sections of the screen with RGH 4SBOW.<br>3. While tracking, adjust with RGH 4PIN and RGH 4SBOW. | | | <RGH MENU><br>RGH 4PIN<br>RGH 4SBOW |  |
| **GREEN HORIZONTAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT**<br>1. Adjust with RGH MBOW so that the pin asymmetry at both sides of the center section of screen is symmetrical.<br>2. Adjust with RGH SBOW so that the bow at both end sections of the screen is symmetrical left and right.<br>3. While tracking, adjust with RGH MBOW and RGH SBOW so that the bow of vertical lines on the entire screen is symmetrical left and right. | | | <RGH MENU><br>RGH MBOW<br>RGH SBOW |  |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN HORIZONTAL SYMMETRICAL PIN DISTORTION ADJUSTMENT**<br>1. Adjust the pin distortion at both sides of the center section of the screen with RGH MPIN.<br>2. Adjust the pin distortion at both end sections of the screen with RGH PIN.<br>3. While tracking, adjust with RGH MPIN and RGH PIN so that the PIN of vertical lines on the entire screen have no bowing.<br>4. If there is asymmetrical pin distortion after the RGH MPIN and RGH PIN adjustments, adjust with RGH MBOW and RGH SBOW while tracking.<br>●With just the PIN AMP adjustment in MAIN, if there is no need to adjust RGV PIN in SUB, this can save power. | | | <RGH MENU><br>RGH MPIN<br>RGH PIN<br>RGH MBOW<br>RGH SBOW |  <br> |
| **GREEN VERTICAL WAVE (TERTIARY DISTORTION) ADJUSTMENT**<br>1. Take the screen top and bottom horizontal lines with RGV WAVE and find the secondary and quaternary waveform.<br>2. There is KEY distortion after the RGV WAVE adjustment, so adjust with RGV WAVE and RGV KEY while tracking. | | | <RGV MENU><br>RGV WAVE<br>RGV KEY | RGV WAVE<br><br>RGV KEY<br><br> |

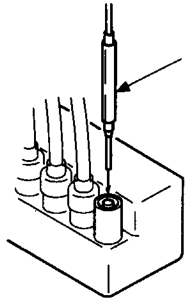
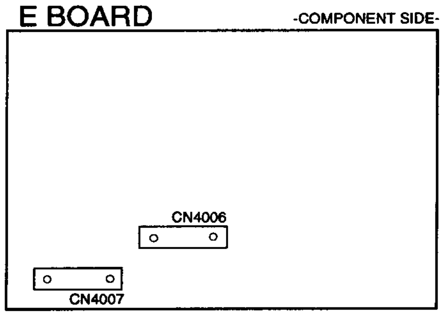
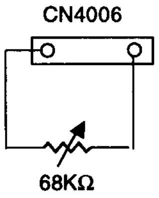
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN VERTICAL QUATERNARY DISTORTION ADJUSTMENT** | | | <RGV MENU> | |
| 1. Correct the quaternary distortion of the horizontal lines at the top and bottom sections of the screen with RGV 4PIN. | | | RGV 4PIN | RGV 4PIN  |
| 1) Since there is no 4SBOW for vertical correction, there will be a slight imbalance, but adjust to eliminate the distortion from the horizontal line at either the top or the bottom of the screen.<br>2) In many cases, the horizontal lines at the top and bottom sections of the screen are not straight lines after the adjustment. As long as the secondary distortion is mild enough that it can be corrected with the PIN adjustment, this is OK. | | | | |
| **GREEN VERTICAL TRAPEZOIDAL DISTORTION ADJUSTMENT** | | | <RGV MENU> | |
| 1. Adjust with RGV SSKW so that the tilt of the horizontal lines at the top and bottom sections of the screen is symmetrical about the center position horizontal line. | | | RGV SSKW | RGV SSKW  |
| 2. Adjust with RGV MKEY so that there is no tilt for the line sections at both sides of the horizontal lines at the center section of the stream. | | | RGV MKEY |  |
| 3. Adjust with RGV KEY so that there is no tilt for the horizontal lines at the top and bottom sections of the screen. | | | RGV KEY | |
| 4. While tracking, adjust with RGV MKEY and RGV KEY so that there is no tilt for the horizontal lines on the entire screen. | | | | |
| 5. If the tilt is unbalanced after the RGV MKEY and RGV KEY adjustment, adjust again with RGV SSKW. | | | RGV SSKW |  |

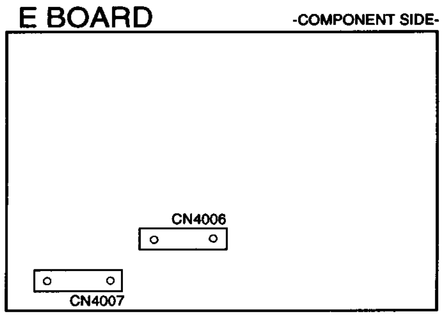
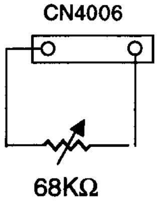
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN VERTICAL ASYMMETRICAL PIN DISTORTION (SECONDARY DISTORTION) ADJUSTMENT**<br>1. Correct the asymmetrical pin distortion at the top and bottom sections of the screen with RGV SBOW. | | | <RGV MENU><br>RGV SBOW | RGV SBOW<br> |
| **GREEN VERTICAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT**<br>1. Adjust the pin distortion for both side sections and the center of the screen with RGV MPIN.<br>2. Adjust with RGV PIN so that the horizontal lines at the top and bottom sections of the screen are straight lines.<br>3. Adjust with RGV MPIN and RGV PIN so that there is no curve in the horizontal lines on the entire screen. | | | <RGV MENU><br>RGV MPIN<br>RGV PIN |  |
| 4. After the adjustments in Items 1-3, adjust the tracking with RGV SBOW, RGV MPIN, and RGV PIN. | | | RGV SBOW |  |

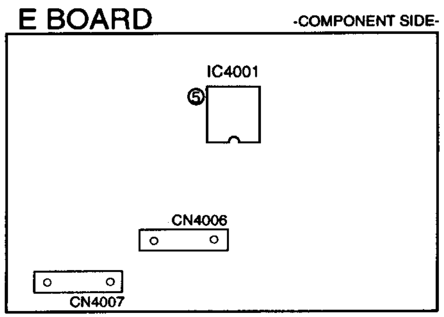
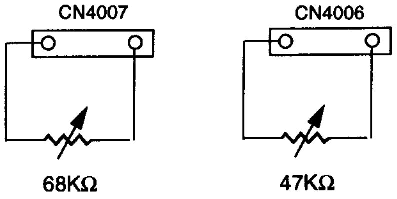
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **GREEN AND RED REGISTRATION ADJUSTMENT (RRH, RRV)**<br>1. Receive a PAL cross-hatch signal.<br>2. Adjust so that the red lines lay on the green lines. Adjust with the same procedure as the GREEN SUB adjustment.<br>Notes: 1. The main correction is not carried out during red registration adjustment.<br>2. Beware. The green adjustment items can be changed by mistake.<br>3. Unlike for green, adjust within the range -127 ~ +128. | PAL Cross-hatch pattern | | | |
| **GREEN AND BLUE REGISTRATION ADJUSTMENT (RBH, RBV)**<br>1. Receive a PAL cross-hatch signal.<br>2. Adjust so that the blue and green lines are on top of each other.<br>Notes : 1. The main correction is not carried out during RED registration adjustment.<br>2. Beware. The GREEN and RED adjustment items can be changed by mistake. | PAL Cross-hatch pattern | | | |

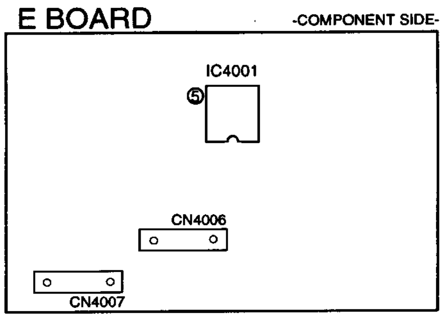
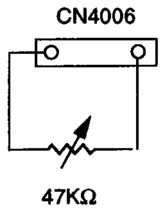
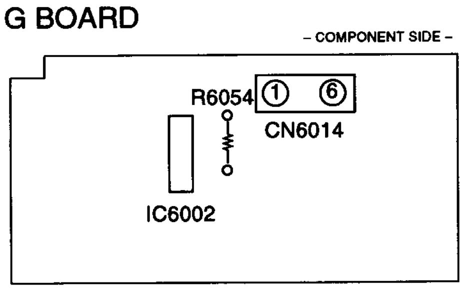
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **AGC ADJUSTMENT** | | | | |
| 1. Receive an off-air signal.<br>2.Adjust the AGC VR ( IF 1001 ) so that there is no snow noise and cross-modulation. | | | | |
| **WHITE BALANCE ADJUSTMENT** | | | | |
| 1. Receive the monoscope pattern signal and adjust the picture quality with the menu. | Monoscope pattern | | PICTURE<br>........... minimum | |
| 2. Adjust service mode SBRT so that the signal 10 IRE section barely glows. | | | < RGB MENU ><br>RGB SBRT | |
| 3. Receive the all-white pattern signal. | All White pattern | | | |
| 4. Adjust the white balance with service mode GCUT and BCUT. | | | RGB GCUT<br>RGB BCUT | |
| 5. Adjust service mode SBRT so that the signal 100 IRE section barely glows. | | | PICTURE<br>........... minimum | |
| 6. Adjust the white balance with service mode GAMP and BAMP. | | | RGB GAMP<br>RGB BAMP | |
| 7. Repeatedly adjust the white balance for the minimum and maximum picture settings. | | | PICTURE<br>........... maximum | |

# SECTION 4
# SAFETY RELATED ADJUSTMENTS

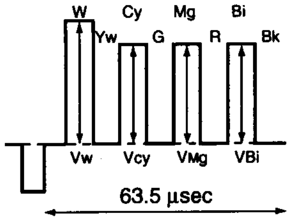
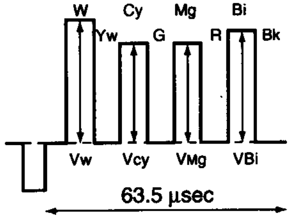
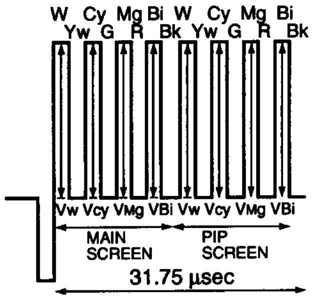
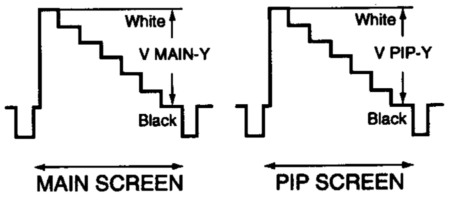
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **[ E BOARD ]**<br>**HV HOLD DOWN CIRCUIT OPERATION CHECK AND ADJUSTMENT**<br>When replacing the following components marked with ◪ on the schematic diagram, always check hold-down voltage and if necessary re-adjust. | | ◪ marked parts<br>C4057, D4026, R988,<br>R4019, T4002,<br>T4003 ( FBT ),<br>E BOARD,<br>HV Block | ⧓ R988 | <br>Remove the cap off from the unused terminal and connect a static voltmeter there. |
| **OPERATION CHECK**<br>1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block. | HIGH-VOLTAGE Voltmeter | HV Block | |  |
| 2. Connect a 68kΩ variable resistor, set to maximum value, across CN4006. | | CN4006 | | |
| 3. Power on the set. | | | | |
| 4. Receive dot signal pattern. | Dot pattern | | | |
| 5. Gradually lower the value of the variable resistor and check that the hold-down circuit operates at a static voltmeter reading of 33.40±0.30kVdc when the raster disappears. | | HIGH-VOLTAGE Voltmeter<br>33.40 ± 0.30kVdc | | |
| **HV HOLD-DOWN ADJUSTMENT**<br>1. REPART STEPS ① ~ ⑤ as above.<br>2. Just at the point hold-down circuit begins to operate switch off the set.<br>3. Remove the VR connected across CN4006, and measure it's resistance.<br>4. Solder a resistor value, nearest to the measured value, across CN4007.<br>5. Reconfirm operation check. | | | |  |

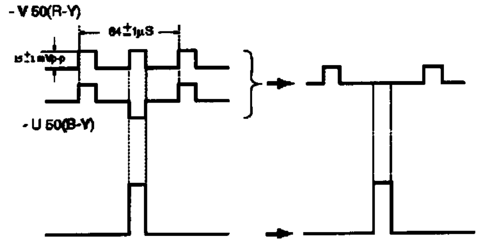
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **HV REGULATION CIRCUIT CHECK AND ADJUSTMENT**<br>When replacing the following components marked with ◪ on the schematic diagram always check HV regulation, and if necessary re-adjust.<br>**OPERATION CHECK**<br>1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block.<br>2. Power on the set.<br>3. Receive dot signal pattern.<br>4. Check that the HV static voltmeter is reading 31.00±0.2kVdc.<br>**HV Regulation adjustment**<br>1. Repeat step ① as aboue.<br>2. Connect 68kΩ variable resistor, set to maximum value, to CN4006.<br>3. Power on the set.<br>4. Receive dot signal pattern.<br>5. Gradually lower the value of the variable resistor until the static voltmeter is reading 31.00±0.20kVdc.<br>6. Switch off the set.<br>7. Remove the VR connected across CN4006, and measure its value.<br>8. Solder a resistor value, nearest to the measured value, across CN4006.<br>9. Reconfirm operation check. | Dot pattern<br>HIGH-VOLTAGE Voltmeter | ◪ marked parts<br>C4033, C4034, C4046, C4047, C4049, D4012, D4018, D4023, D4028, D4035, R983, R4022, R4046, R4047, R4048, R4053, R4054, R4057, R4059, R4060, R4061, R4077, R4079, R4086, R4087, R4088, R4091, R4092, R4097, R4098, R4100, Q4013, T4002, T4003 ( FBT ),<br>E Board, HV Block<br>HIGH-VOLTAGE Voltmeter<br>31.00 ± 0.20k Vdc<br>CN4006 | ⧓ R983 |  <br> |

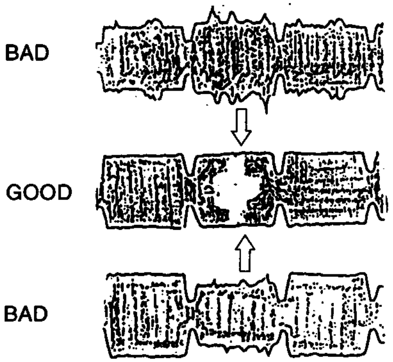
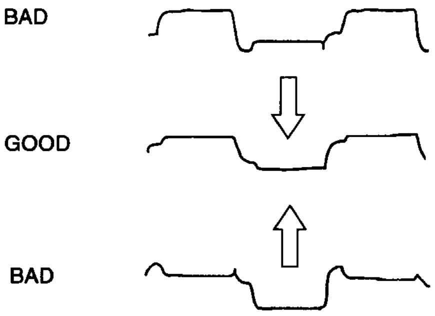
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **HV HOLD DOWN ADJUSTMENT WITHOUT USING STATIC HIGH VOLTAGE METER**<br>It is normally desirable that HV hold down and HV regulation checks uses a high voltage meter. However, sometimes one is not available, for example in the held, below is an adjustment method that can be used. | | | ⧓ R983, R988 |  E BOARD<br>-COMPONENT SIDE-<br>IC4001<br>⑤<br>CN4006<br>CN4007 |
| 1. Receive DOT signal ( PICTURE : 80%, BRIGHTNESS : 50% ). | Dot pattern | | | |
| 2. Turn off the power of the projector, and remove ⧓R983 from CN4006 and ⧓R988 from CN4007. | | | | |
| 3. Fix a 47kΩ VR onto CN4006 with solder, and set the resistor value at maximum.<br>Fix a 68kΩ VR onto CN4007 with solder, and set the resistor value at minimum. | | | 47kΩ VR<br>......... maximum<br>68kΩ VR<br>......... minimum | |
| 4. Turn on the power of the projector. Connect a digital voltmeter to IC4001 ⑤ pin. | Digital voltmeter | IC4001 ⑤ pin | | |
| 5. Slowly turn the 47kΩ VR that is soldered to CN4006, and gradually lower the voltage of IC4001 ⑤ pin down to 1.67Vdc. | | | |  |
| 6. Slowly turn the 68kΩ VR that is soldered to CN4007, and gradually raise the resistor value until the raster disappears and the HV hold down circuit starts operating. | | | | |
| 7. Turn off the power of the projector. | | | | |
| 8. Remove the 68kΩ VR from CN4007, and measure the resistor value with the digital voltmeter. Put a resistor ( metal oxide, 1/4W ) that has same value as the measured resistor onto CN4007 and solder it. | | | | |
| 9. Set the value of the 47kΩ VR on CN4006 at the maximum. Receive DOT signal ( PICTURE : 80%, BRIGHTNESS : 50% ). | | | PICTURE<br>............80%<br>BRIGHTNESS<br>............CENTER | |
| 10. Turn on the power of the projector. | | | | |
| 11. Connect a digital voltmeter to IC 4001 ⑤ pin. | | | | |
| 12. Slowly turn down the 47kΩ VR that is connected to CN4006 to gradually lower the voltage of IC4001 ⑤ pin between 1.62 to 1.70Vdc, and check if the raster disappears and the hold down circuit operates. | | | | |
| 13. Turn off the power of the projector. | | | | |
| 14. Remove the 47kΩ VR from CN4006. Put back the removed ⧓ R983 onto CN4006 and solder it again. | | | | |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **HV REGULATOR ADJUSTMENT WITHOUT USING STATIC HIGH VOLTAGEMETER ( ⧓R983 )**<br>1. Receive DOT signal ( PICTURE : 80%, BRIGHTNESS : 50% ).<br>2. Turn off the power of the projector.<br>3. Remove ⧓R983 from CN4006.<br>4. Fix a 47kΩ VR onto CN4006 with solder, and set the resistor value at maximum. | Dot signal | | ⧓ R983<br>PICTURE<br>................80%<br>BRIGHTNESS<br>.............center |  E BOARD<br>-COMPONENT SIDE-<br>IC4001<br>⑤<br>CN4006<br>CN4007 |
| 5. Turn on the power of the projector. Connect a digital voltmeter to IC4001 ⑤ pin.<br>6. Slowly turn the 47kΩ VR that is soldered to CN4006, and gradually lower the voltage of IC4001 ⑤ pin down to 1.49Vdc.<br>7. Turn off the power of the projector.<br>8. Remove the 47kΩ VR from CN4006, and measure the resistor value with the digital voltmeter. Put a resistor ( metal oxide, 1/4W ) that has same value as the measured resistor onto CN4006 and solder it.<br>9. Turn on the power of the projector. Check if the voltage of IC4001 ⑤ pin is between 1.46 and 1.53Vdc. | Digital voltmeter | IC4001 ⑤ pin | |  |
| 10. Receive FULL WHITE signal ( PICTURE : 80%, BRIGHTNESS : 50% ).<br>11. Turn off the power of the projector. | Full white pattern | | PICTURE<br>................80%<br>BRIGHTNESS<br>.............center | |
| **[ G BOARD ]**<br>**+B MAX VOLTAGE CONFIRMATION**<br>The following adjustments should always be performed when replacing IC6002 and R6054.<br>1. Supply 230VAC to with variable autotransformer.<br>2. Input monoscope signal.<br>3. Set the PICTURE control and the BRIGHTNESS controls to reset.<br>4. Confirm the voltage of G BOARD CN6014 ① pin connecter is less than 134.50 ± 1.00Vdc.<br>5. If step 4 is not satisfied, replace IC6002 and R6054 repeat above steps. | | CN6014 ① pin | |  G BOARD<br>– COMPONENT SIDE –<br>R6054<br>① ⑥<br>CN6014<br>IC6002<br>Voltage of CN6014 ① pin<br>Less than 134.50 ±1.00Vdc |

# SECTION 5
# ELECTRICAL ADJUSTMENTS

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **B BOARD ADJUSTMENT**<br>**SUB COLOUR (SCOL) ADJUSTMENT**<br>1. Input the PAL Colour Bar signal and adjustment the picture control.<br>2. Set to service mode.<br>3. Connect an oscilloscope between ㉔ pin of IC409 and ground.<br>4. Adjust SCOL so that Vcy = VMg = VBi in the waveform levels.<br>5. Write the data to memory. | PAL Colour Bar pattern<br>Oscilloscope | IC409 ㉔ pin<br>(B(3/4) Board) | PICTURE .... 80%<br>RGB SCOL :<br>Vcy =VMg=VBi | <IC409 ㉔ pin><br><br> W Cy Mg Bi<br>Yw G R Bk<br>Vw Vcy VMg VBi<br>63.5 µsec |
| **SUB HUE (MHUE,SHUE) ADJUSTMENT**<br>1. Input the NTSC Colour Bar signal.<br>2. Set to service mode.<br>3. Connect an oscilloscope between ㉔ pin of IC409 and ground.<br>4. Adjust MHUE so that Vcy = VMg in the waveform levels.<br>5. Write the data to memory. | NTSC Colour Bar pattern<br>Oscilloscope | IC409 ㉔ pin<br>(B(3/4) Board) | MCD MHUE :<br>Vcy =VMg | <IC409 ㉔ pin><br><br> W Cy Mg Bi<br>Yw G R Bk<br>Vw Vcy VMg VBi<br>63.5 µsec |
| (PIP MODE)<br>1. Input the NTSC Colour Bar signal.<br>2. Select PIP on screen mode and put the set into service mode.<br>3. Connect an oscilloscope between ㉔ pin of IC409 and ground.<br>4. Adjust SHUE so that Vcy = VMg in the waveform levels.<br>5. Write the data to memory. | NTSC Colour Bar pattern<br>Oscilloscope | IC409 ㉔ pin<br>(B(3/4) Board) | SCD SHUE :<br>Vcy =VMg | (PIP MODE) < IC409 ㉔ pin ><br><br> W Cy Mg Bi W Cy Mg Bi<br>Yw G R Bk Yw G R Bk<br>Vw Vcy VMg VBi Vw Vcy VMg VBi<br>MAIN SCREEN<br>PIP SCREEN<br>31.75 µsec |
| **SUB CONTRAST (SCON) ADJUSTMENT**<br>(PIP MODE)<br>1. Input the PAL Colour Bar signal.<br>2. Select PIP on screen mode and put the set into service mode.<br>3. Connect an oscilloscope Q1 emitter on the B(1/4) board and ground.<br>4. Adjust SCON so that V MAIN-Y = V PIP-Y in the waveform levels.<br>5. Write the data to memory. | PAL Colour Bar pattern<br>Oscilloscope | Q1 emitter<br>(B(1/4) Board) | PIP SCON:<br>V MAIN-Y =V PIP-Y | (PIP MODE)<br>< B(1/4) board - Q1 emitter ><br><br> White<br>V MAIN-Y<br>Black<br>White<br>V PIP-Y<br>Black<br>MAIN SCREEN<br>PIP SCREEN |

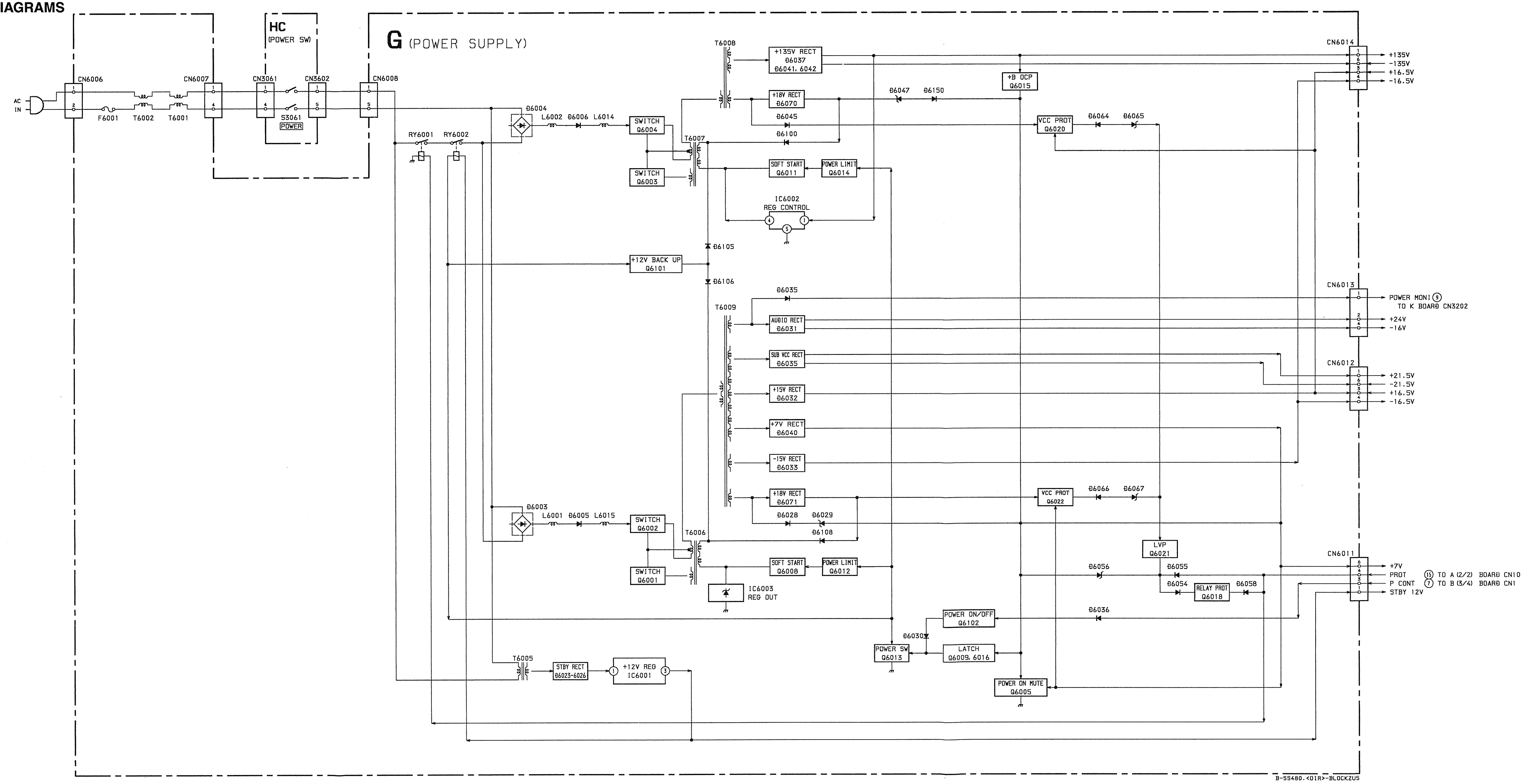
| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **SUB WHITE BALANCE ADJUSTMENT**<br>(PIP MODE)<br>1. Input Gray Scale signal 20 IRE.<br>2. Select PIP in screen mode and put the set into service mode.<br>3. Connect an oscilloscope Q2 emitter on the B(1/4) board and ground.<br>4. Adjust RV1 so that V main = Vpip in the waveform levels.<br>5. Connect an oscilloscope Q7 emitter on the B(1/4) board and ground.<br>6. Adjust RV2 so that V main = Vpip in the waveform levels. | Oscilloscope | [ B(1/4) Board ]<br>Q2 emitter (R-Y)<br>Q7 emitter (B-Y) | [ B(1/4) Board ]<br>RV1 (R-Y)<br>RV2 (B-Y) | < Q2 emitter, Q7 emitter ><br><br> |
| **P IN P POSITION ADJUSTMENT**<br>1. Upon receiving the Monoscope signal.<br>2. Set service mode and then press the PIP command twice. The P in P positon will then move periodically to four points. Adjust " RDV " and " RDH " on the new screen so that the four points are distributed equally at ; up, down, left and right.<br>3. Write the data to memory. | Monoscope pattern | | < PIP MENU ><br>RDV<br>RDH | |
| **TEXT POSITION ADJUSTMENT**<br>1. Receive the RF signal with TEXT.<br>2. Set to service mode.<br>3. Set the TEXT in MIX mode and adjust the screen positon with " TXH " and " TXV ".<br>4. Write the data to memory. | | | < TXT MENU ><br>TXH (H position)<br>TXV (V position) | |
| **OSD POSITION ADJUSTMENT**<br>1. Receive the PAL Colour Bar signal.<br>2. Set to service mode.<br>3. Adjust " OSH " so that the center line of the signal and the center of the crosshairs of the OSD display match are aligned with each other.<br>4. Write the data to memory. | PAL Colour Bar pattern | | < CPU MENU ><br>OSH | |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **B2 BOARD ADJUSTMENT**<br>**SECAM FILTER ADJUSTMENT**<br>1. Receive the SECAM Colour Bar signal.<br>2. Adjust BELL filter by rotating L3503 so that ⑮ pin IC3502 should be flat/smooth chroma signal.<br>3. Adjust B-Y filter by rotating L3505 so that Q3508 emitter (R-Y out) should getsymmetrical transient between (R-Y)>(B-Y) and (B-Y)>(R-Y). | SECAM Colour Bar pattern | IC3502 ⑮ pin<br>Q3508 emitter | L3503<br>L3505 | < IC3502 ⑮ pin waveform ><br><br> <br>< Q3508 emitter waveform ><br><br> |
| **H. FREQUENCY ADJUSTMENT**<br>1. Connect a frequency counter to ⑫ pin of IC3501.<br>2. Adjust RV3501 so that the frequency counter is 15.625KHz ± 50Hz.<br>3. Input a SECAM Colour Bar signal/p.<br>4. Confirm that ⑫ pin of IC3501 should be 15.625KHz ± 50Hz. | SECAM Colour Bar pattern | RV3501 | IC3501 ⑫ pin | |

| ADJUSTMENT ITEM AND PROCEDURE | EQUIPMENT AND SIGNAL | MEASUREMENT POSITION | ADJUSTMENT LOCATION | ILLUSTRATION AND SHAPE AND NUMBER |
|---|---|---|---|---|
| **A BOARD ADJUSTMENT** | | | | |
| **V BLANKING SIZE ADJUSTMENT**<br>1. Receive PAL monoscope signal.<br>2. Select "BKU" in D/A menu.<br>3. Reduce the data value by pressing $\boxed{3}$ and $\boxed{6}$ on the commander to adjust blanking size and minimize the shear on the screen top.<br>4. Select "BKD" in D/A menu.<br>5. Increase the data value by pressing $\boxed{3}$ and $\boxed{6}$ on the commander to adjust blanking size and minimize the shear on the screen bottom. | PAL Monoscoope pattern | | | |
| **H SIZE ADJUSTMENT**<br>1. Receive a PAL monoscope signal.<br>2. Set to Service Mode.<br>3. Select H SIZE of VSP menu with the commander buttons $\boxed{1}$ and $\boxed{4}$.<br>4. Adjust to 15.4 ± 0.2 square with $\boxed{3}$ and $\boxed{6}$. | PAL Monoscoope pattern | | | |
| **S CORRECTION ADJUSTMENT**<br>1. Receive a PAL monoscope signal.<br>2. Set to Service Mode.<br>3. Select VSCO of VSP menu with the commander buttons $\boxed{1}$ and $\boxed{4}$.<br>4. Adjust to data "00" with $\boxed{3}$ and $\boxed{6}$. | PAL Monoscoope pattern | | | |
| **V SIZE ADJUSTMENT**<br>1. Receive a PAL monoscope signal.<br>2. Set to Service Mode.<br>3. Select V SIZE of VSP menu with the commander buttons $\boxed{1}$ and $\boxed{4}$.<br>4. Adjust to 11.6 ± 0.2 square with $\boxed{3}$ and $\boxed{6}$. | PAL Monoscoope pattern | | | |

# SECTION 6
# DIAGRAMS

## 6-1. BLOCK DIAGRAM (1)


HC
(POWER SW)
G (POWER SUPPLY)
AC IN
CN6006
F6001
T6002
T6001
CN6007
CN3061
CN3602
S3061
POWER
CN6008
RY6001
RY6002
D6004
L6002 D6006 L6014
SWITCH Q6004
SWITCH Q6003
T6007
T6008
+135V RECT D6037 D6041, 6042
+18V RECT D6070
D6045
D6100
D6047
D6150
+B OCP Q6015
VCC PROT Q6020
D6064
D6065
SOFT START Q6011
POWER LIMIT Q6014
IC6002 REG CONTROL
4
5
1
D6105
+12V BACK UP Q6101
D6106
D6035
T6009
AUDIO RECT D6031
SUB VCC RECT D6035
+15V RECT D6032
+7V RECT D6040
-15V RECT D6033
+18V RECT D6071
D6028
D6029
D6108
VCC PROT Q6022
D6066
D6067
D6003
L6001 D6005 L6015
SWITCH Q6002
SWITCH Q6001
T6006
SOFT START Q6008
POWER LIMIT Q6012
IC6003 REG OUT
LVP Q6021
D6056
D6055
D6054
RELAY PROT Q6018
D6058
D6036
POWER ON/OFF Q6102
D6030
POWER SW Q6013
LATCH Q6009, 6016
POWER ON MUTE Q6005
T6005
STBY RECT D6023-6026
+12V REG IC6001
1
3
CN6014
+135V
-135V
+16.5V
-16.5V
CN6013
POWER MONI ⑨ TO K BOARD CN3202
+24V
-16V
CN6012
+21.5V
-21.5V
+16.5V
-16.5V
CN6011
+7V
PROT ⑮ TO A (2/2) BOARD CN1005
P CONT ⑦ TO B (3/4) BOARD CN1
STBY 12V
B-SS480.<DIR>-BLOCKZU5

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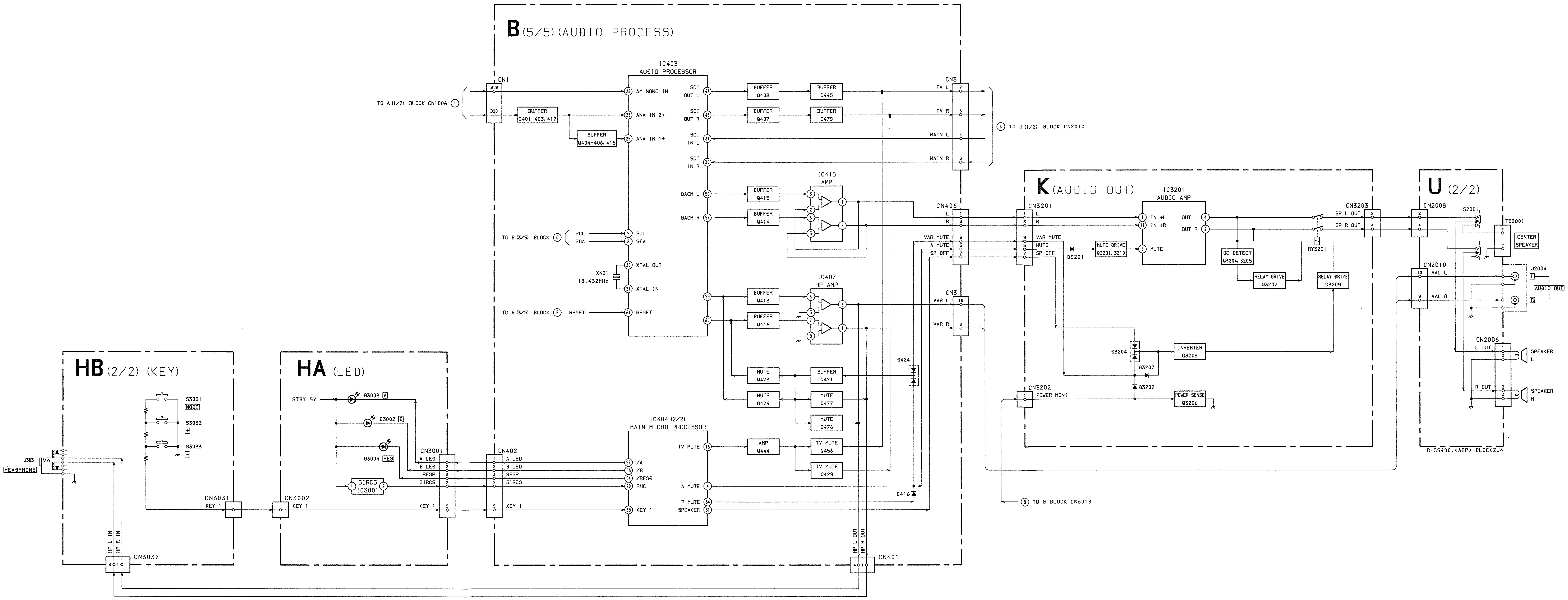
**BLOCK DIAGRAM (2)**



B (5/5) (AUDIO PROCESS)
IC403
AUDIO PROCESSOR
CN1
B19
B20
TO A (1/2) BLOCK CN1006 ①
BUFFER Q401-403, 417
BUFFER Q404-406, 418
AM MONO IN
ANA IN 2+
ANA IN 1+
SCI OUT L
SCI OUT R
SCI IN L
SCI IN R
BUFFER Q408
BUFFER Q445
BUFFER Q407
BUFFER Q479
CN3
TV L
TV R
MAIN L
MAIN R
④ TO U (1/2) BLOCK CN2010
BACM L
BACM R
BUFFER Q415
BUFFER Q414
IC415 AMP
TO B (3/5) BLOCK Ⓒ
SCL
SDA
X401 18.432MHz
XTAL OUT
XTAL IN
TO B (3/5) BLOCK Ⓕ RESET
RESET
CN406
VAR MUTE
A MUTE
SP OFF
IC407 HP AMP
BUFFER Q413
BUFFER Q416
VAR L
VAR R
Q424
MUTE Q473
BUFFER Q471
MUTE Q474
MUTE Q477
MUTE Q476
IC404 (2/2)
MAIN MICRO PROCESSOR
TV MUTE
AMP Q444
TV MUTE Q456
TV MUTE Q429
/A
/B
/RESO
RMC
KEY 1
A MUTE
P MUTE
SPEAKER
Q416
CN402
A LED
B LED
RESP
SIRCS
HP L OUT
HP R OUT
CN401
HB (2/2) (KEY)
S3031 MODE
S3032 +
S3033 −
J3031 HEADPHONE
CN3031 KEY 1
HP L IN
HP R IN
CN3032
HA (LED)
STBY 5V
D3003 A
D3002 B
D3004 RES
SIRCS IC3001
CN3001
CN3002 KEY 1
K (AUDIO OUT)
CN3201
L
R
VAR MUTE
MUTE
SP OFF
IC3201 AUDIO AMP
IN +L
IN +R
OUT L
OUT R
MUTE
MUTE DRIVE Q3201, 3210
D3201
DC DETECT Q3204, 3205
RELAY DRIVE Q3207
RELAY DRIVE Q3209
RY3201
CN3203
SP L OUT
SP R OUT
D3204
D3207
D3202
INVERTER Q3208
CN3202 POWER MONI
POWER SENSE Q3206
⑤ TO G BLOCK CN6013
U (2/2)
CN2008
S2001
TB2001
CENTER SPEAKER
CN2010
VAL L
VAL R
J2004
L
AUDIO OUT
R
CN2006
L OUT
R OUT
SPEAKER L
SPEAKER R
B-SS400.<AEP>-BLOCKZU4

## BLOCK DIAGRAM (3)

B (4/5) (TWIN-PUCTURE, FLICKER-FREE μCOM, OSD, NICAM, CHROMA DECODER)
IC801 JUNGLE
IC802 HALF H GENERATOR
IC805 V OSP
IC804 (2/2) BUFFER
IC804 (1/2) BUFFER
COMP Q805, 806
INVERTER Q801
HD BUFFER Q804
SWITCH Q803
TO B (5/5) BLOCK
A (2/2) (H/V DEFLECTION)
CN1006
H DRIVE Q1504, 1505
H OUT Q1515
PIN AMP
PIN DRIVE Q1517
PIN OUT Q1518
H PULSE SHAPE
BUFFER
H DEF PROT Q1502
PROT Q1501
PROT DELAY Q1503
IC1401 V OUT
PROT DELAY Q1402
V DEF PROT Q1401
+5V REG IC1602
-5V REG IC1601
+12V REG IC1604
+11V REG
+9V REG IC1605
+5V REG IC1606
-12V REG IC1603
STBY REG IC1501
CN1012
CN1011
CN1010
CN1005
CN1009
CN1008
CN1013
CN1007
CN1000
CN4003
E (HV-REGULATOR DYNAMIC FOCUS)
BUFFER Q4004
H DRIVE Q4003
H OUT Q4005
DF AMP Q4502, 4503
DF OUT Q4506
DRIVE CONT Q4001, 4002
BUFFER Q4006
IC4001 (1/2) PWM
H SAW GENERATOR Q4007, 4017
H SAW Q4015, 4016
IC4003 (2/2) H SAW
IC4001 (2/2) PWM
COMP OUT Q4008, 4009
IC4004 (4/4) ERROR AMP
HLB PROT
IC4003 (1/2) H SAW
IC4002 (1/2) HV-PROT
HV STOP1 Q4011
POWER OFF MUTE Q4019
IK PROT Q4013
IC4004 (2/4) ERROR AMP
IC4004 (3/4) ERROR AMP
IC4004 (1/4) ERROR AMP
IC4002 (2/2) HV-PROT
HV STOP2 Q4012
IK PROT Q4014
RED PROT Q4016
G2 STOP Q4501
G2 STOP CONT Q4503
PROT SW Q4018
CN4002
CN4004
CN4011
CN4003
CN4008
HV BLOCK
FOCUS BLOCK
TO PICTURE TUBE
TO CB BLOCK CN7503
TO HV BLOCK
TO FOCUS BLOCK
D (H/V SUB DEFLECTION)
CN5001
IC5101 PHASE SHIFT
INVERTER Q5101
INVERTER Q5102
IC5009 (3/3) ADD AMP
IC5004 H OSC
IC5006 V OSC
IC5008 (2/4) ADD AMP
IC5009 (2/3) ADD AMP
IC5009 (1/3) ADD AMP
IC5008 (1/4) ADD AMP
IC5008 (4/4) ADD AMP
IC5008 (3/4) ADD AMP
H PARA BUFFER Q5002
V PARA BUFFER Q5003
PROT SW
V BLK INVERTER Q5401
IC5001 REG (μ-COMPUTER)
INVERTER Q5004
RESET IC5003
X5001 4.19MHz
IC5002 G CONVERTER
IC5005 R CONVERTER
IC5007 B CONVERTER
IC5502 (3/3) CONVERTER OUT
IC5501 (1/3) CONVERTER OUT
IC5501 (2/3) CONVERTER OUT
IC5501 (3/3) CONVERTER OUT
IC5502 (2/3) CONVERTER OUT
IC5502 (1/3) CONVERTER OUT
+5V REG IC5601
-5V REG IC5602
CN5003
CN5004
CN5005
ZR (VM OUT)
ZG (VM OUT)
ZB (VM OUT)
CN8105
CN8107
CN8104
CN8106
CN8102
CN8101
BUFFER Q8101
BUFFER Q8102
BUFFER Q8103
VM AMP Q8104, 8105
CN8206
CN8203
CN8204
CN8202
CN8205
CN8201
BUFFER Q8201
BUFFER Q8202
VM AMP Q8203, 8204
CN8304
CN8302
CN8303
CN8301
BUFFER Q8301
BUFFER Q8302
VM AMP Q8303, 8304
TO B (4/4) BOARD CN407

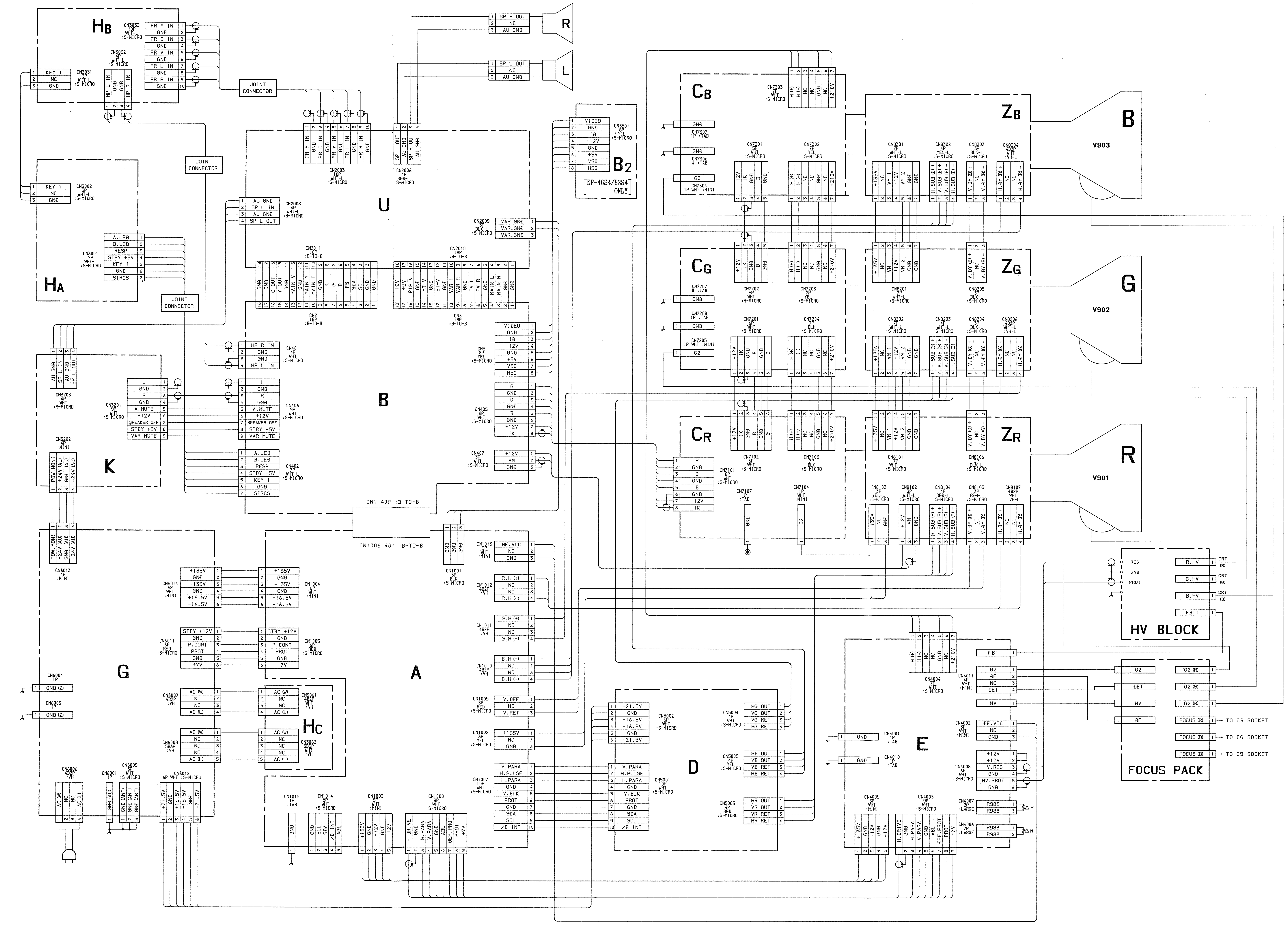
## BLOCK DIAGRAM (4)

B (3/5) (TWIN-PICTURE, FLICKER-FREE µCOM, OSD, TEXT, CHROMA DECODER)
CR (VIDEO OUT)
CG (VIDEO OUT)
CB (VIDEO OUT)
IC202 IPQ A/D FORMAT
IC204 IPQ 1F VRAM
IC212 NOISE REDUCTION
IC207 IPQ 1F VRAM
IC218 IPQ BENDIC
IC201 IPQ MEMORY
IC210 IPQ CPU
IC216 SWITCH
IC219 SWITCH
IC222 BUFFER
IC217 SWITCH
IC215 SWITCH
IC204 PHASE DISCRIMINATOR
IC203 +5V REG
IC213 +5V REG
IC214 +5V REG
IC221 +5V REG
IC412 SWITCH
IC414 YM SWITCH
IC413 YM SWITCH
IC411 SCP
IC601 DYNAMIC PICTURE
IC408 RGB MATRIX
IC409 SHADING
IC410 V SHIFT
IC402 PAGE RAM
IC405 TEXT PROCESSOR
IC401 NONVOLA MEMORY
IC404 (1/2) MICRO PROCESSOR
IC406 RESET
IC7101 VIDEO OUT
IC7201 VIDEO OUT
IC7301 VIDEO OUT
V901 PICTURE TUBE
V902 PICTURE TUBE
V903 PICTURE TUBE
CN405
CN1
CN407
CN7101
CN7102
CN7103
CN7104
CN7201
CN7202
CN7203
CN7204
CN7205
CN7301
CN7302
CN7303
CN7304
TO B (2/5) BLOCK
TO B (4/5) BLOCK
TO A (2/2) BLOCK CN1006
TO ZA BLOCK CN8102
TO B (4/5) BLOCK
TO B (2/5) BLOCK
TO A (1/2) BLOCK CN1006
TO A (2/2) BLOCK CN1006
TO G BLOCK CN6011
TO HV BLOCK
TO FOCUS BLOCK
X201 12MHz
X402 20.25MHz
X403 8MHz
B-SS400.<AEP>-BLOCKZU3-P1
B-SS400.<AEP>-BLOCKZU3-P2

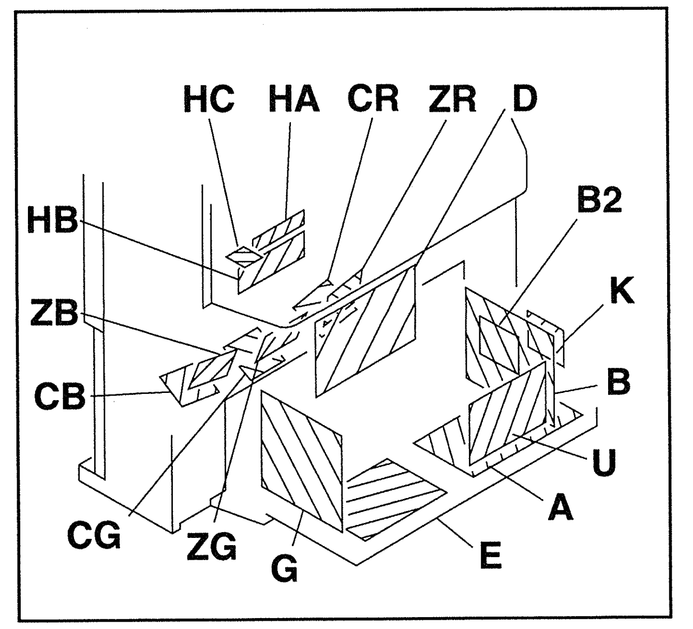
**BLOCK DIAGRAM (5)**

A (1/2) (TUNER, IF)
TU1001 TUNER
IF1001
ADC BUFFER Q1001-1003
BUFFER Q1005,1006
CN1006
B (1/5)
CN1
CN3
U (1/2) (AV-SW, AV-IN/OUT)
CN2010
IC2002 AV-SWITCH
TV IN
COMB IN
AV1 IN
AV2 IN
AV2 OUT
AV4 IN
AV3 IN
BUFFER Q2005
BUFFER Q2004
BUFFER Q2007
BUFFER Q2011
BUFFER Q2006
BUFFER Q2003
CN2011
J2003
IC2001 (2/2) 6dB AMP
IC2001 (1/2) 75Ω DRIVER
CN2001 AV1
CN2002 AV2
SWITCH Q2002
J2001 YC IN 2
BUFFER Q2008
BUFFER Q2009
BUFFER Q2010
CN2004 AV4
BUFFER Q2001
J2002 YC IN 4
HB (1/2)
CN5033
J5032 AV IN 3
CN2003
FR R OUT
FR L OUT
FR V OUT
FR C OUT
FR Y OUT
B (2/5) (TWIN PICTURE, FLICKER-FREE, μCOM, OSD, CHROMA DECODER)
CN2
MAIN Y
MAIN C
MAIN V
BUFFER Q13
FL1 LPF
BUFFER Q20
IC9 2D COMB FILTER
CLAMP Q23,25
BUFFER Q26
BUFFER Q29
IC6 4FSC-PLL
4FSC ADJ Q12,14
FSC BUFFER Q8
Y BUFFER Q9
C BUFFER Q10
IC2 MAIN CHROMA DECODER
Y BUFFER Q1
V BUFFER Q2
U BUFFER Q7
YSO
VSO
USO
RGB ON Q37
IC3 1H DELAY LINE
INVERTER Q41
HV SWITCH Q36
IC10 Y/C/V SWITCH
BUFFER Q21
TRAP Q16
EQU Q15
BUFFER Q28
FL2 LPF
C OFF Q33,35
BUFFER Q31
BUFFER Q30
FL3 LPF
CN3
IC8 SUB CHROMA DECODER
AMP Q22,24
BUFFER Q17
IC5 PIP A/D
IC4 PIP PROCESSOR D/A
IC7 LH DELAY LINE
BUFFER Q18
BUFFER Q19
AMP Q42
INVERTER Q38
INVERTER Q11
IC1 EXT RGB/PIP SWITCH
BUFFER Q3
BUFFER Q4
BUFFER Q5
SECAM SW Q42,201
BUFFER Q6
BUFFER Q39
RGB MUTE Q40
INVERTER Q27
TO B (3/5) BLOCK
CN1
TO A (1/2) BLOCK CN1006
CN5
B2 (SECAM) [KP-46S4/53S4 ONLY]
CN3501
BUFFER Q3501
AMP Q3510
IC3503 H/BLK SWITCH
BUFFER Q3508
INVERTER Q3506
SECAM SW Q3509
IC3502 SECAM IDENT
IC3501 JUNGLE
INVERTER Q3507
INVERTER Q3505
RV3501
L3505
B-SS400.<AEP>-BLOCKZU1-P1
B-SS400.<AEP>-BLOCKZU1-P2

## 6-2. FRAME SCHEMATIC DIAGRAM



## 6-3. CIRCUIT BOARDS LOCATION



Reference information

| | | |
|---|---|---|
| RESISTOR | : RN | METAL FILM |
| | : RC | SOLID |
| | : FPRD | NONFLAMMABLE CARBON |
| | : FUSE | NONFLAMMABLE FUSIBLE |
| | : RW | NONFLAMMABLE WIREWOUND |
| | : RS | NONFLAMMABLE METAL OXIDE |
| | : RB | NONFLAMMABLE CEMENT |
| | : ※ | ADJUSTMENT RESISTOR |
| COIL | : LF-8L | MICRO INDUCTOR |
| CAPACITOR | : TA | TANTALUM |
| | : PS | STYROL |
| | : PP | POLYPROPYLENE |
| | : PT | MYLAR |
| | : MPS | METALIZED POLYESTER |
| | : MPP | METALIZED POLYPROPYLENE |
| | : ALB | BIPOLAR |
| | : ALT | HIGH TEMPERATURE |
| | : ALR | HIGH RIPPLE |

**Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

**Note: The symbol ▬⊞ display is on the component side.**

**The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

**The symbol ▬⊞ indicate fast operating fuse. Replace only with fuse of same rating as maked.**

## 6-4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

- Capacitors without voltage indication are all 50V
  All capacitors are in µF unless otherwise noted.
- All resistors are in ohms.
  kΩ=1000Ω, MΩ=1000kΩ
- Indication of resistance, which dose not have one for rating electrical power, is as follows.

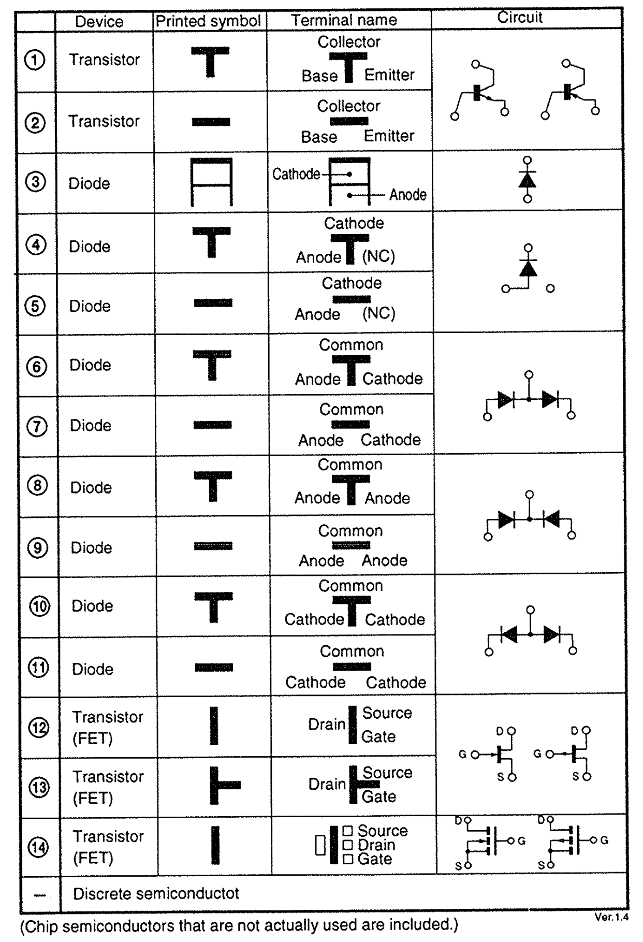
  Pitch : 5mm
  Rating electrical power : 1/4 W

- 1/4 W in resistance, 1/10 W and 1/8 W in chip resistance.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- △ : internal component.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⏚ : earth-chassis.
- The components identified by ⧓ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◢ , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⧓ and repeat the adjustment until the specified value is achieved. (Refer to R988, R983 adjustment on Page 40-43.)

| Part replaced ( ◢ ) | Adjustment ( ⧓ ) |
|---|---|
| C4057, D4026, R988, R4019, T4002, T4003 (FBT), E BOARD, HV BLOCK | HOLD-DOWN (R988) |
| C4033, C4034, C4046, C4047,C4049, D4012, D4018, D4023, D4028, D4035,R983, R4022, R4046, R4047, R4048, R4053, R4054, R4057, R4059, R4060, R4061, R4077, R4079, R4086, R4087, R4088, R4091, R4092, R4097, R4098, R4100, Q4013, T4002, T4003 ( FBT ), E Board , HV Block | HOLD-DOWN (R983) |

- When replacing the part in below table, be sure to perform the related adjustment.
- Readings are taken with a color-bar signal input.
  no mark : PAL
  〈 〉 : SECAM
  ( ) : NTSC 3.58
- Readings are taken with a 10MΩ digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
  ∗ : Measurement impossibillity.
- ▬ V : B+line.
- ▬ ▬ ▬ V : B-line.
  (Actual measured value may be different).
- ⇨ : signal path.
- Circled numbers are waveform references.

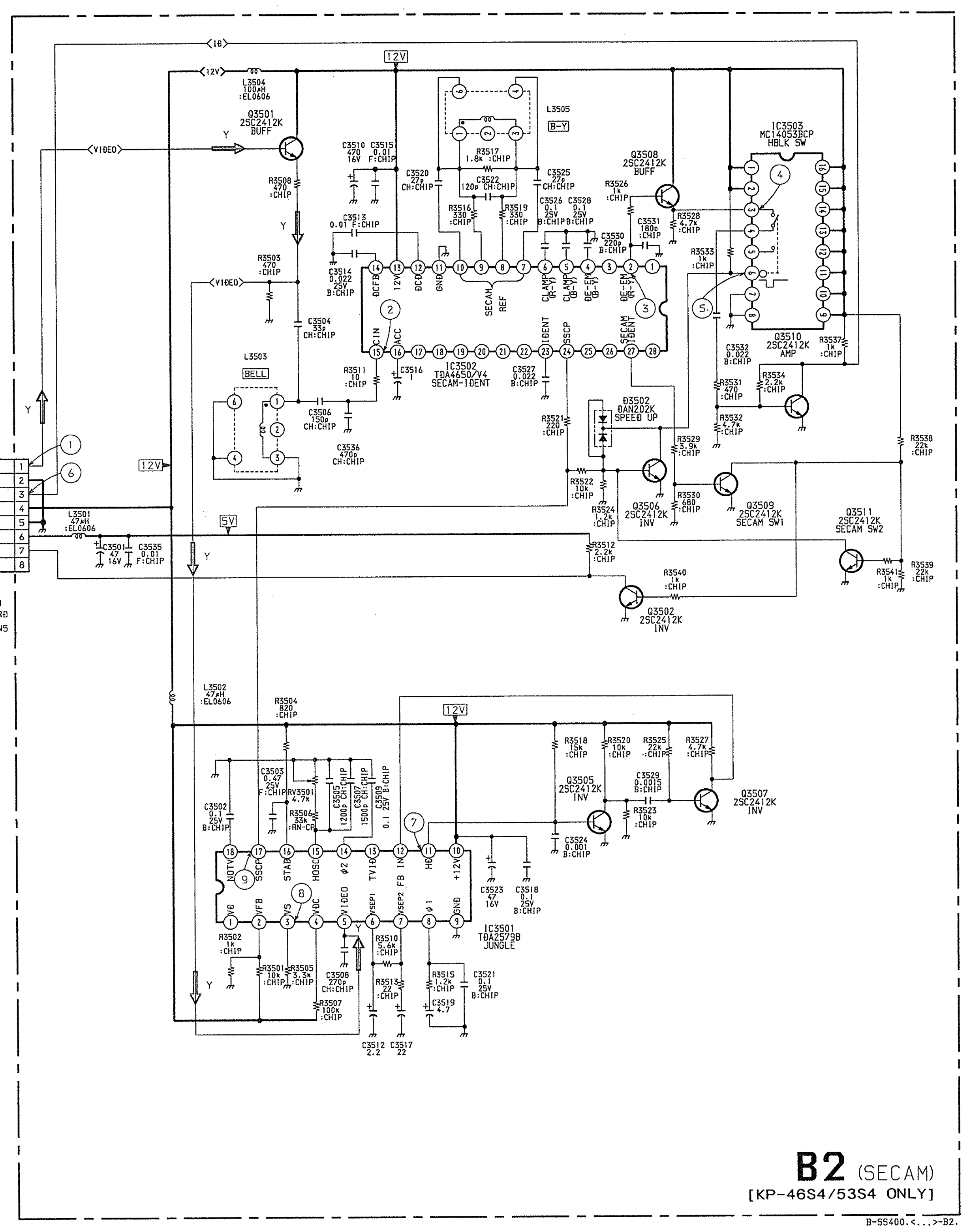
## Terminal name of semiconductors in silk screen printed circuit ( ∗ )



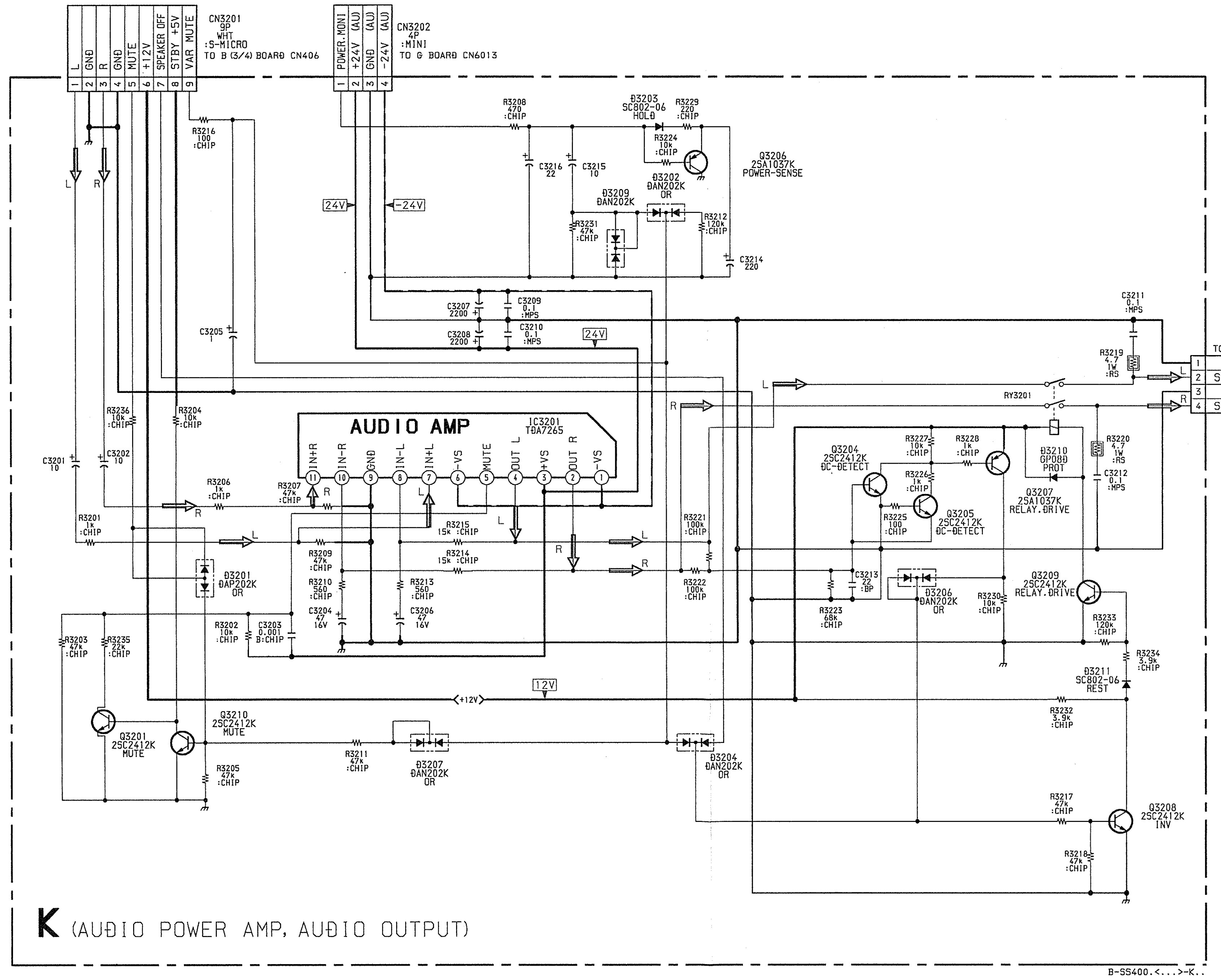
| | Device | Printed symbol | Terminal name | Circuit |
|---|---|---|---|---|
| ① | Transistor | T | Collector<br>Base Emitter | |
| ② | Transistor | ▬ | Collector<br>Base Emitter | |
| ③ | Diode | ⊓ | Cathode<br>Anode | |
| ④ | Diode | T | Cathode<br>Anode (NC) | |
| ⑤ | Diode | ▬ | Cathode<br>Anode (NC) | |
| ⑥ | Diode | T | Common<br>Anode Cathode | |
| ⑦ | Diode | ▬ | Common<br>Anode Cathode | |
| ⑧ | Diode | T | Common<br>Anode Anode | |
| ⑨ | Diode | ▬ | Common<br>Anode Anode | |
| ⑩ | Diode | T | Common<br>Cathode Cathode | |
| ⑪ | Diode | ▬ | Common<br>Cathode Cathode | |
| ⑫ | Transistor (FET) | ▌ | Drain Source<br>Gate | D G S |
| ⑬ | Transistor (FET) | ┣ | Drain Source<br>Gate | D G S |
| ⑭ | Transistor (FET) | ▌ | □ Source<br>□ Drain<br>□ Gate | D G S |
| – | Discrete semiconductot | | | |

(Chip semiconductors that are not actually used are included.)

Ver.1.4


12V
VIDEO
GND
10
12V
GND
5V
/SECAM
+5D
CN3501
TO B (1/4) BOARD CN5
IC3502 TDA4650/V4 SECAM-IDENT
IC3503 MC14053BCP HOLD SW
IC3501 TDA2579B JUNGLE

B2 (SECAM)
[KP-46S4/53S4 ONLY]


AUDIO AMP
IC3201 TDA7265
CN3201 8P WHT (S-MICRO) TO B (3/4) BOARD CN406
CN3202 4P (MINI) TO D BOARD CN6013
CN3203 4P WHT (S-MICRO) TO U BOARD CN2008
AU GND
SP L OUT
AU GND
SP R OUT
24V
12V
Q3201 2SC2412K MUTE
Q3210 2SC2412K MUTE
Q3208 2SC2412K INV
Q3206 2SA1037K POWER-SENSE
Q3207 2SA1037AK RELAY DRIVE

K (AUDIO POWER AMP, AUDIO OUTPUT)

## B2 BOARD IC VOLTAGE LIST

|  | Pin | Voltages |
|---|---|---|
| IC3501 | 1 | – |
|  | 2 | <1.1> |
|  | 3 | <0.3> |
|  | 4 | <11.1> |
|  | 5 | <2.2> |
|  | 6 | <7.6> |
|  | 7 | <6.6> |
|  | 8 | <2.8> |
|  | 9 | GND |
|  | 10 | <11.6> |
|  | 11 | <0.3> |
|  | 12 | <1.2> |
|  | 13 | – |
|  | 14 | <2.5> |
|  | 15 | <4.4> |
|  | 16 | <9.1> |
|  | 17 | <1.6> |
|  | 18 | <6.2> |
| IC3502 | 1 | – |
|  | 2 | <7.0> |
|  | 3 | – |
|  | 4 | <7.0> |
|  | 5 | <9.7> |
|  | 6 | <9.9> |
|  | 7 | <3.4> |
|  | 8 | <2.9> |
|  | 9 | <2.9> |
|  | 10 | <3.4> |
|  | 11 | GND |
|  | 12 | <2.4> |
|  | 13 | <11.6> |
|  | 14 | <5.8> |
|  | 15 | <3.4> |
|  | 16 | <7.9> |
|  | 17 | – |
|  | 18 | – |
|  | 19 | – |
|  | 20 | – |
|  | 21 | – |
|  | 22 | – |
|  | 23 | <7.5> |
|  | 24 | <1.5> |
|  | 25 | – |
|  | 26 | – |
|  | 27 | <5.7> |
|  | 28 | – |
| IC3503 | 1 | <11.6> |
|  | 2 | <11.6> |
|  | 3 | <6.4> |
|  | 4 | <6.4> |
|  | 5 | <10.8> |
|  | 6 | GND |
|  | 7 | GND |
|  | 8 | <11.6> |
|  | 9 | <11.6> |
|  | 10 | <11.6> |
|  | 11 | <11.6> |
|  | 12 | <11.6> |
|  | 13 | <11.6> |
|  | 14 | <11.6> |
|  | 15 | <11.6> |
|  | 16 | <11.6> |

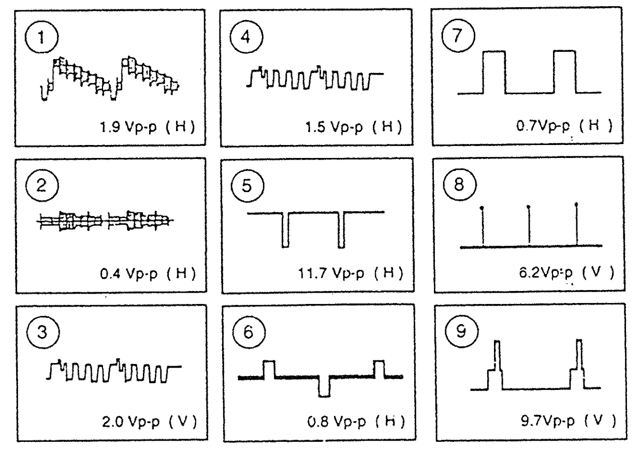
All voltages are in V.
–: Blank Pin

## B2 BOARD TRANSISTOR VOLTAGE LIST

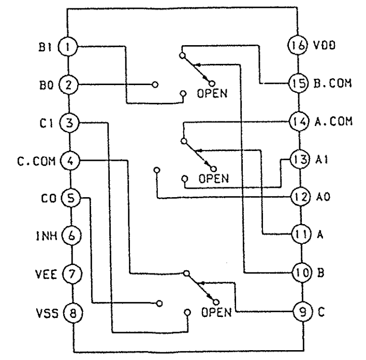
|  | B | C | E |
|---|---|---|---|
| Q3501 | <5.1> | <11.6> | <4.4> |
| Q3502 | <0.3> | <4.7> | GND |
| Q3505 | <0.3> | <2.8> | GND |
| Q3506 | <0.2> | <10.8> | GND |
| Q3507 | <0.2> | <1.1> | GND |
| Q3508 | <7.1> | <11.6> | <6.4> |
| Q3509 | <0.7> | <0.1> | GND |
| Q3510 | <6.8> | <1.2> | <0.1> |
| Q3511 | <0.1> | <0.2> | GND |

All voltages are in V.

## • B2 BOARD WAVEFORMS



## B2 BOARD : IC3503 MC14053BCP


B1
B0
C1
C.COM
C0
INH
VEE
VSS
VDD
B.COM
A.COM
A1
A0
A
B
C
OPEN

## K BOARD TRANSISTOR VOLTAGE LIST

|  | B | C | E |
|---|---|---|---|
| Q3201 | 0.8 | 0.1 | GND |
| Q3204 | 0 | 12.4 | GND |
| Q3205 | GND | 12.3 | 0 |
| Q3206 | 12.3 | 0 | 12.3 |
| Q3207 | 12.3 | 0 | 12.8 |
| Q3208 | 0.2 | 6.6 | GND |
| Q3209 | 0.7 | 0.1 | GND |
| Q3210 | 0 | 0.8 | GND |

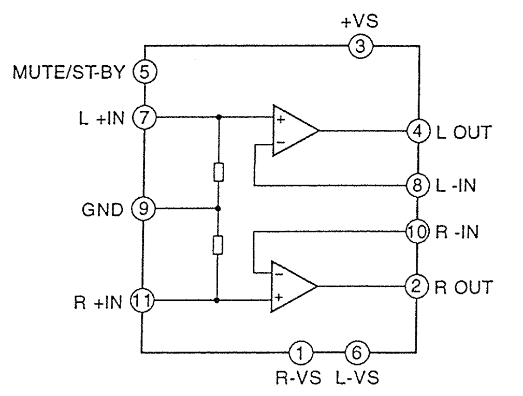
All voltages are in V.

## K BOARD IC VOLTAGE LIST

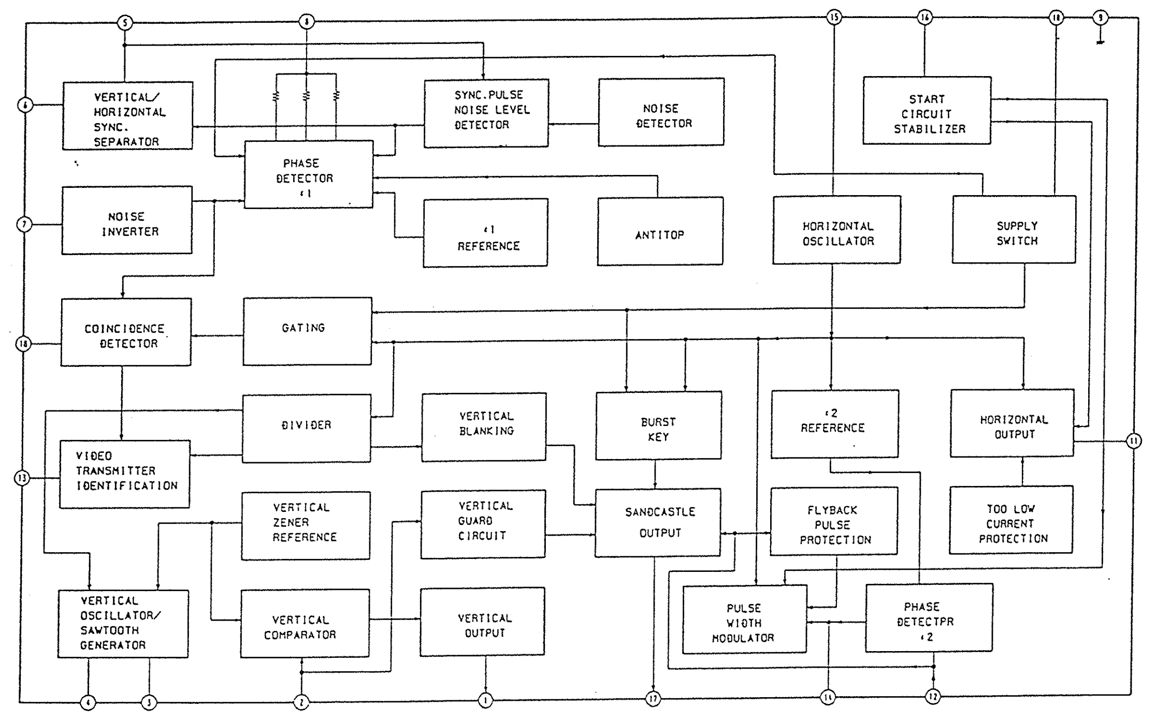
|  | Pin | Voltages |
|---|---|---|
| IC3201 | 1 | -24.0 |
|  | 2 | 0 |
|  | 3 | 24.0 |
|  | 4 | 0 |
|  | 5 | 13.8 |
|  | 6 | -24.0 |
|  | 7 | 0 |
|  | 8 | 0 |
|  | 9 | GND |
|  | 10 | 0 |
|  | 11 | 0 |

All voltages are in V.

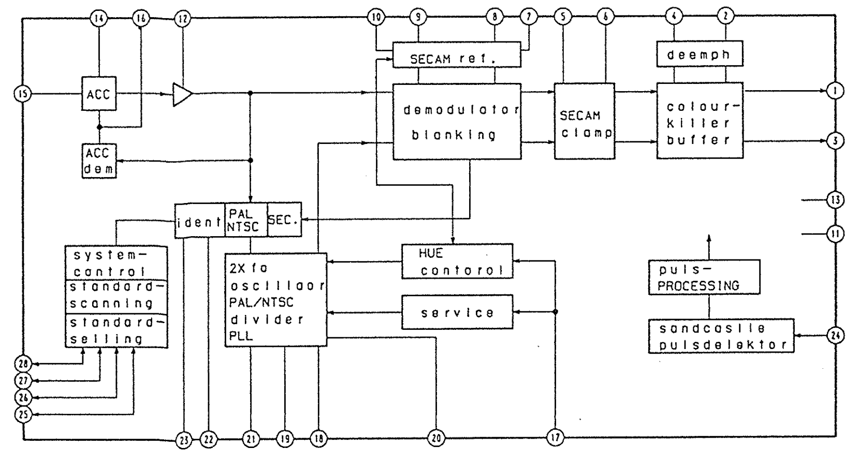
## K BOARD : IC3201 TDA7265

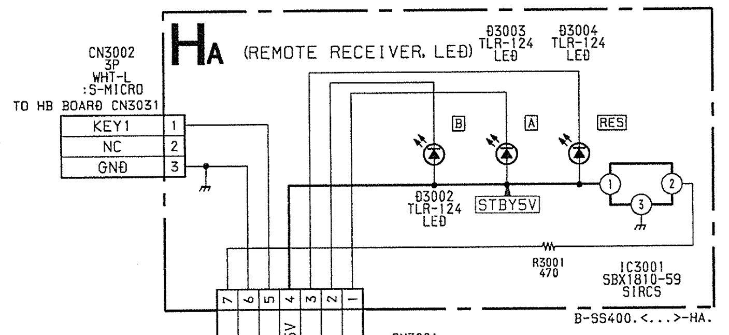

+VS
3
MUTE/ST-BY 5
L +IN 7
GND 9
R +IN 11
4 L OUT
8 L -IN
10 R -IN
2 R OUT
1
6
R-VS L-VS

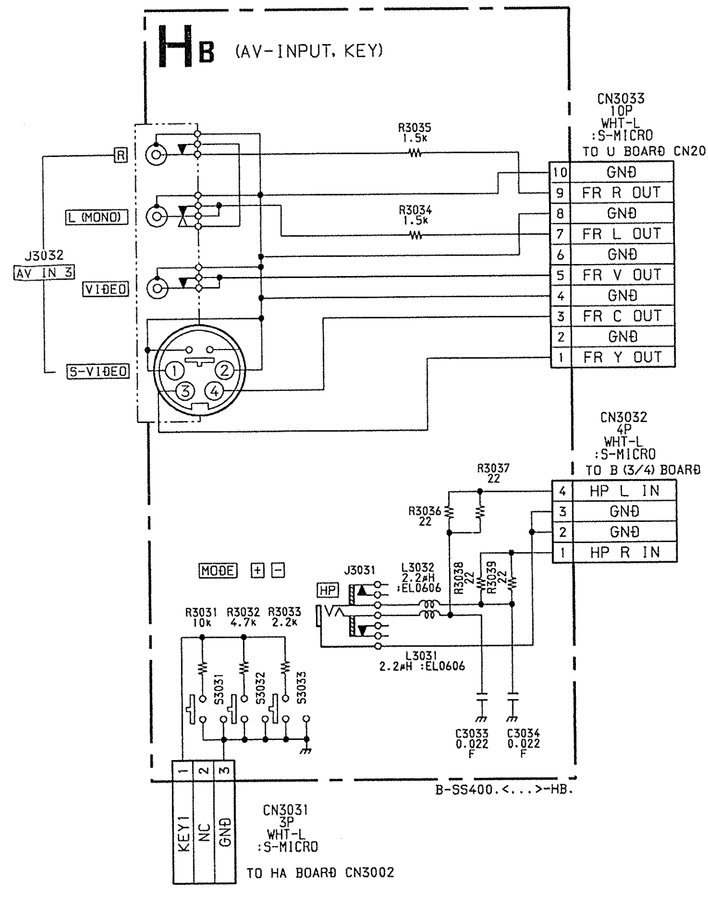
## B2 BOARD : IC3501 TDA2579B

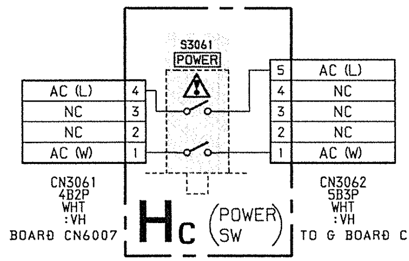

VERTICAL/HORIZONTAL SYNC. SEPARATOR
PHASE DETECTOR ϕ1
SYNC PULSE NOISE LEVEL DETECTOR
NOISE DETECTOR
START CIRCUIT STABILIZER
NOISE INVERTER
ϕ1 REFERENCE
ANTITOP
HORIZONTAL OSCILLATOR
SUPPLY SWITCH
COINCIDENCE DETECTOR
GATING
VIDEO TRANSMITTER IDENTIFICATION
DIVIDER
VERTICAL BLANKING
BURST KEY
ϕ2 REFERENCE
HORIZONTAL OUTPUT
VERTICAL ZENER REFERENCE
VERTICAL GUARD CIRCUIT
SANDCASTLE OUTPUT
FLYBACK PULSE PROTECTION
TOO LOW CURRENT PROTECTION
VERTICAL OSCILLATOR/SAWTOOTH GENERATOR
VERTICAL COMPARATOR
VERTICAL OUTPUT
PULSE WIDTH MODULATOR
PHASE DETECTOR ϕ2

## B2 BOARD : IC3502 TDA4650/V4


ACC
ACC dem
SECAM ref.
demodulator blanking
deemph
SECAM clamp
colour-killer buffer
ident
PAL NTSC
SEC
HUE control
service
system-control standard scanning standard selling
2X fo oscillator PAL/NTSC divider PLL
puls-processing
sandcastle pulsdetektor

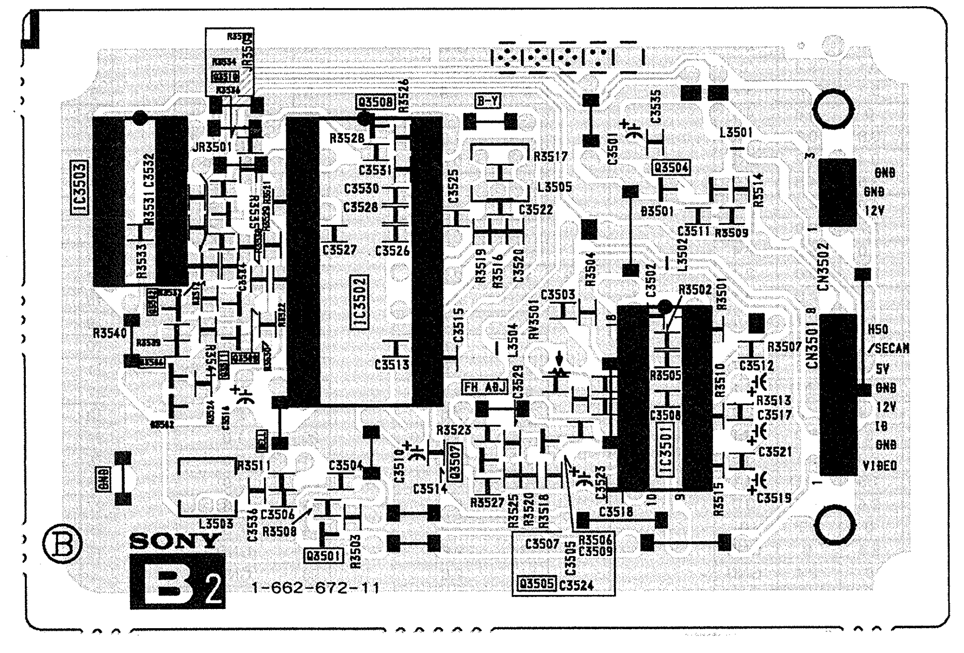

HA (REMOTE RECEIVER, LED)
CN3002 3P WHT (S-MICRO) TO HB BOARD CN3031
KEY1
NC
GND
D3002 TLR-124 LED
D3003 TLR-124 LED
D3004 TLR-124 LED
RES
IC3001 SBX1610-59 SIRCS
CN3001 7P WHT (S-MICRO) TO B (3/4) BOARD CN402


HB (AV-INPUT, KEY)
CN3033 10P WHT (S-MICRO) TO U BOARD CN2003
GND
FR R OUT
GND
FR L OUT
GND
FR V OUT
GND
FR C OUT
GND
FR Y OUT
CN3032 4P WHT (S-MICRO) TO B (3/4) BOARD CN401
HP L IN
GND
GND
HP R IN
VIDEO
S-VIDEO
J3032 AV IN 3
MODE
S3031
S3032
S3033
CN3031 3P WHT (S-MICRO) TO HA BOARD CN3002
KEY1


HC (POWER SW)
S3061 POWER
AC (L)
NC
NC
AC (N)
CN3061 4P WHT (VH) TO G BOARD CN6007
CN3062 4P WHT (VH) TO G BOARD CN6008

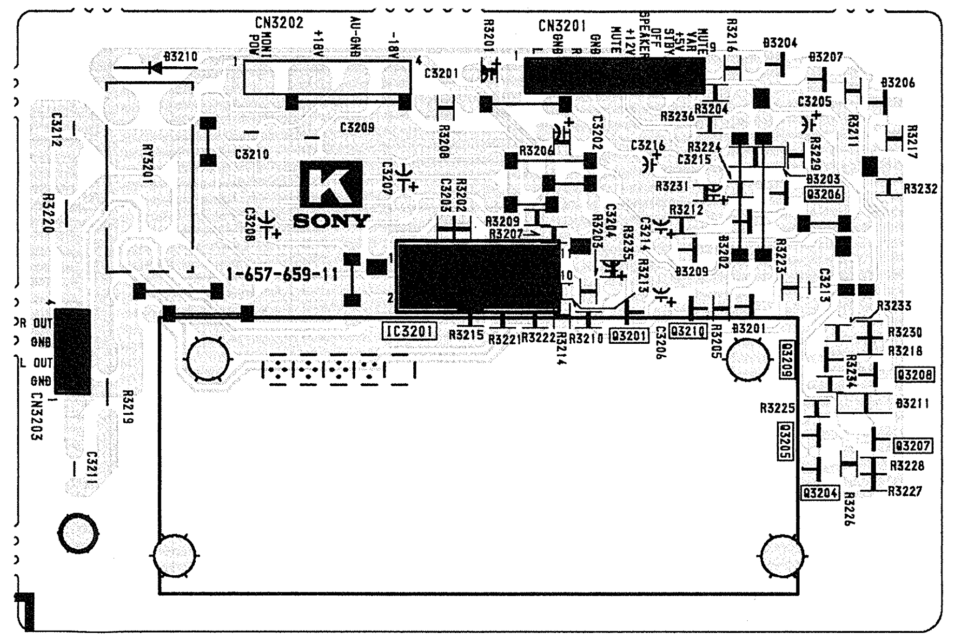
## B2 [SECAM] (KP-46S4/53S4 ONLY)

### – B2 BOARD –


SONY
B2
1-662-672-11

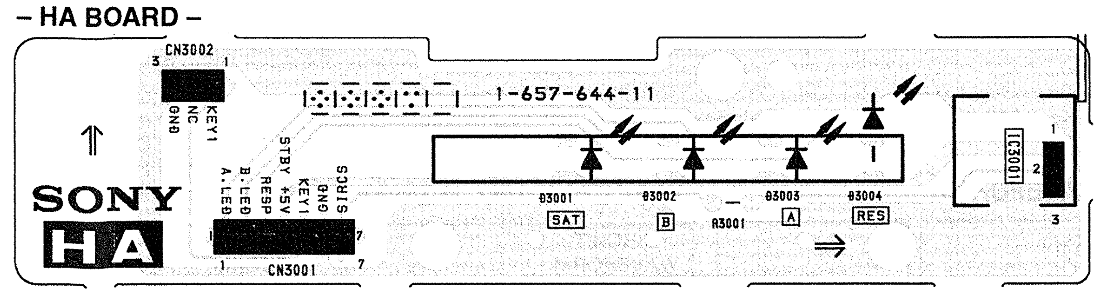
## K [AUDIO POWER AMP, AUDIO AMP]

### – K BOARD –


K
SONY
1-657-659-11

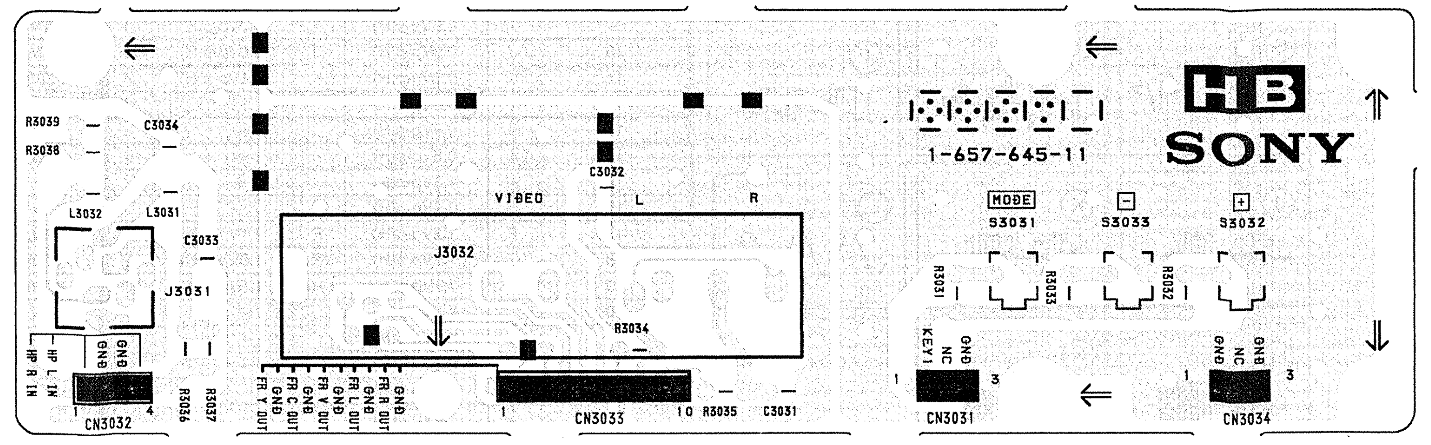
## HA [REMOTE RECEIVER, LED]

### – HA BOARD –


SONY
HA
1-657-644-11
CN3002
CN3001
RES

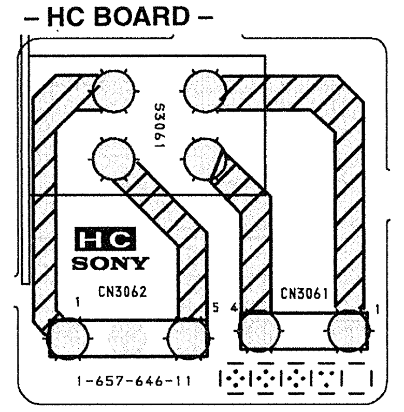
## HB [AV INPUT 3, FUNCTION KEY]

### – HB BOARD –

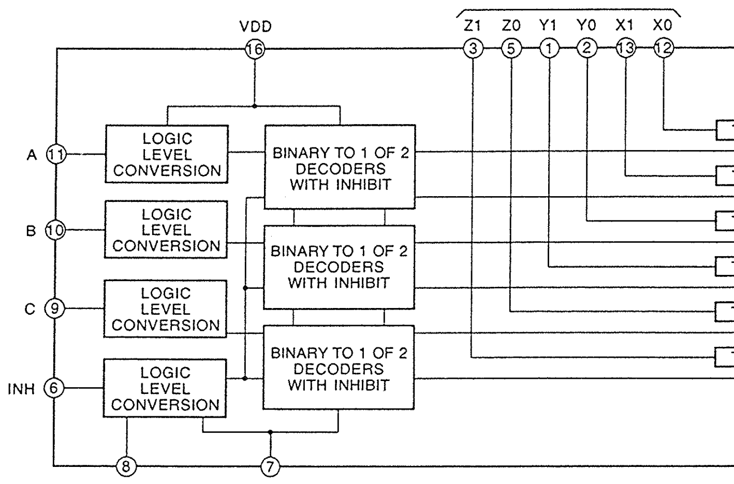

HB
SONY
1-657-645-11
VIDEO
L
R
MODE
S3031
S3033
S3032
J3032
CN3032
CN3033
CN3031

## HC [POWER SWITCH]

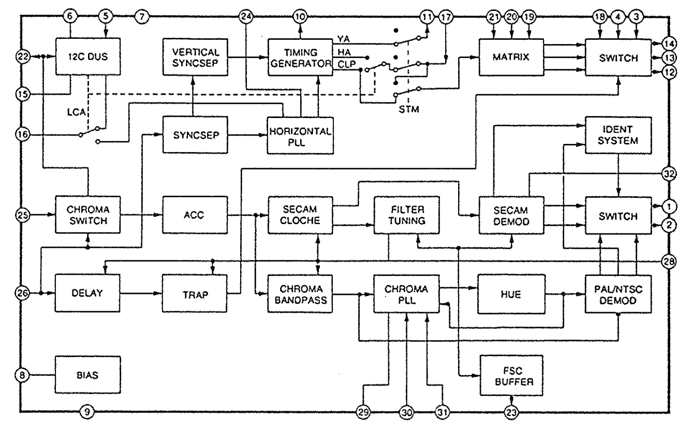
### – HC BOARD –


HC
SONY
CN3062
CN3061
S3061
1-657-646-11

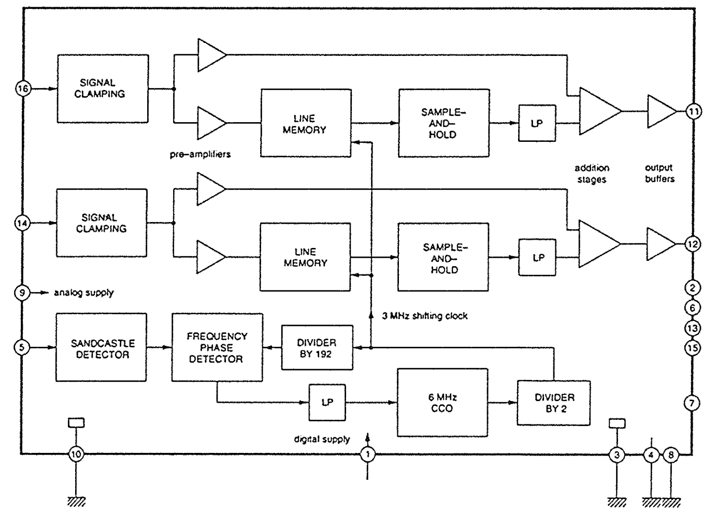
## B (1/4) BOARD : IC1 MC14053BF


IN/OUT
VDD
Z1
Z0
Y1
Y0
X1
X0
A
B
C
INH
LOGIC LEVEL CONVERSION
BINARY TO 1 OF 2 DECODERS WITH INHIBIT
TG
OUT/IN X
OUT/IN Y
OUT/IN Z
VSS
VEE

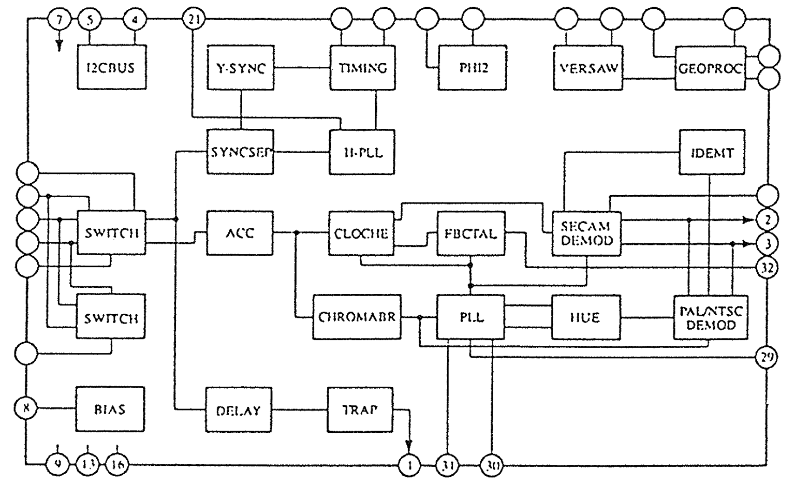
## B (1/4) BOARD : IC2 TDA9141-N2C


12C DUS
VERTICAL SYNCSEP
TIMING GENERATOR
YA
HA
CLP
MATRIX
SWITCH
LCA
STM
SYNCSEP
HORIZONTAL PLL
IDENT SYSTEM
CHROMA SWITCH
ACC
SECAM CLOCHE
FILTER TUNING
SECAM DEMOD
SWITCH
DELAY
TRAP
CHROMA BANDPASS
CHROMA PLL
HUE
PAL/NTSC DEMOD
BIAS
FSC BUFFER

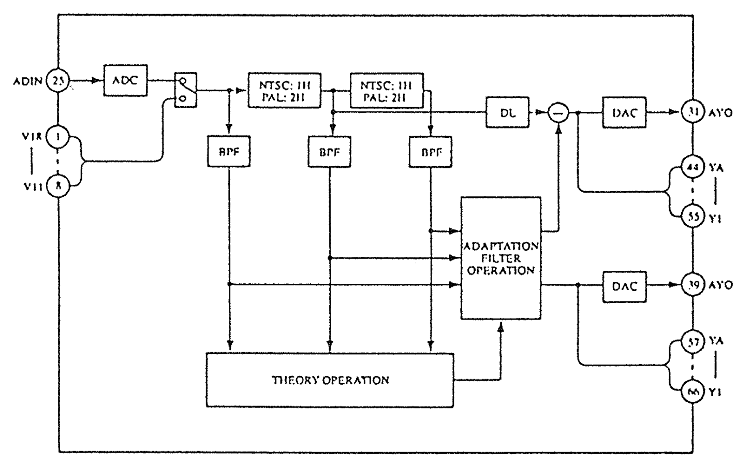
## B (1/4) BOARD : IC3 TDA4665T


SIGNAL CLAMPING
LINE MEMORY
SAMPLE-AND-HOLD
LP
pre-amplifiers
addition stages
output buffers
SIGNAL CLAMPING
LINE MEMORY
SAMPLE-AND-HOLD
LP
analog supply
3 MHz shifting clock
SANDCASTLE DETECTOR
FREQUENCY PHASE DETECTOR
DIVIDER BY 192
LP
6 MHz CCO
DIVIDER BY 2
digital supply

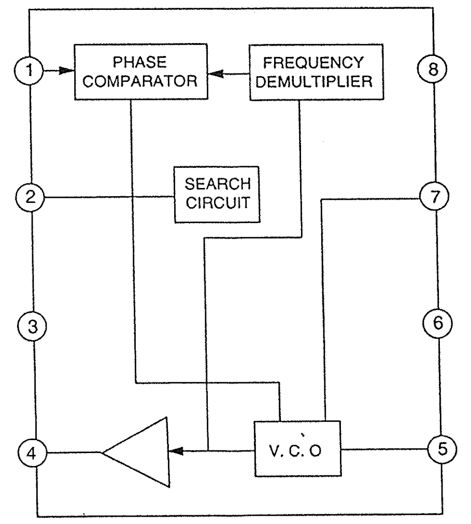
## B (1/4) BOARD : IC8 TDA9160A


I2CBUS
Y-SYNC
TIMING
PHI2
VERSAW
GEOPROC
SYNCSEP
H-PLL
IDENT
SWITCH
ACC
CLOCHE
FBCTAL
SECAM DEMOD
SWITCH
CHROMABR
PLL
HUE
PAL/NTSC DEMOD
BIAS
DELAY
TRAP

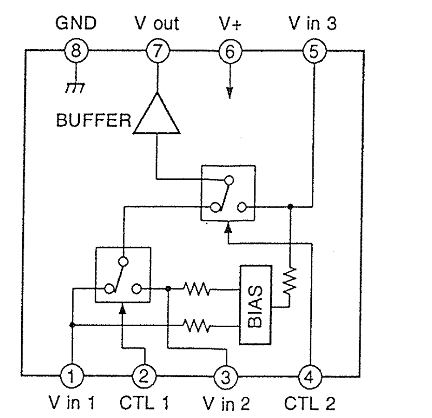
## B (1/4) BOARD : IC9 CXD2024AQ-TL


ADIN
ADC
NTSC: 1H PAL: 2H
NTSC: 1H PAL: 2H
DL
DAC
AYO
V1R
V11
BPF
BPF
BPF
YA
Y1
ADAPTATION FILTER OPERATION
DAC
AYO
YA
Y1
THEORY OPERATION

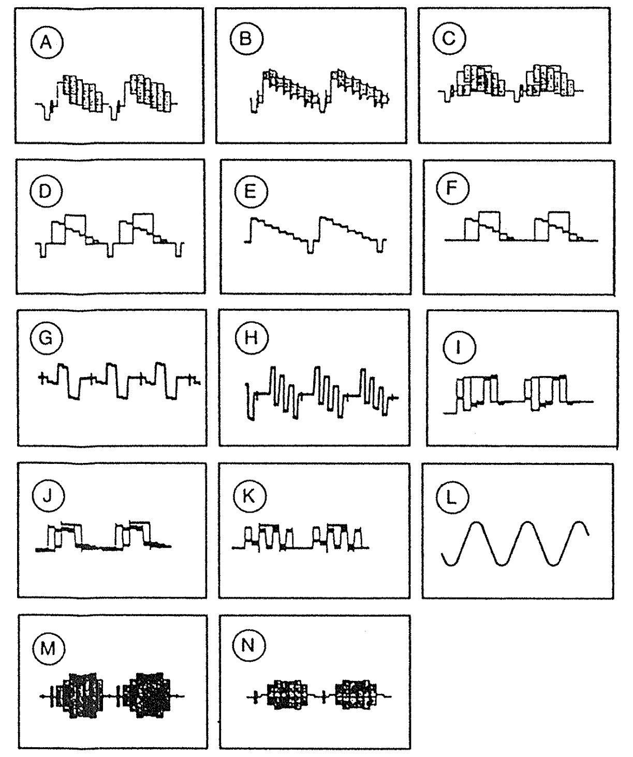
## B (1/4) BOARD :
## IC6 NJM2240M (TE2)


PHASE COMPARATOR
FREQUENCY DEMULTIPLIER
SEARCH CIRCUIT
V.C.O

## B (1/4) BOARD :
## IC10 NJM2235M


GND
V out
V+
V in 3
BUFFER
BIAS
V in 1
CTL 1
V in 2
CTL 2

## • B (1/4) BOARD WAVEFORMS



## B(1/4) BOARD TRANSISTOR VOLTAGE LIST

| | B | C | E |
|---|---|---|---|
| Q1 | 3.2 | 7.6 | 2.6 |
| Q2 | 2.6 | 7.6 | 2.0 |
| Q3 | 0 | GND | 0.7 |
| Q4 | 0 | GND | 0.7 |
| Q5 | 0 | GND | 0.7 |
| Q6 | 0 | 4.8 | 0.7 |
| Q7 | 2.6 | 7.6 | 2.0 |
| Q8 | 0.1 | 8.8 | 0 |
| Q9 | 5.1 | GND | 5.7 |
| Q10 | 0 | 8.8 | 4.4 |
| Q11 | 3.8 | 0.3 | GND |
| Q12 | 0.4 | 4.6 | GND |
| Q13 | 3.5 | 4.8 | 2.9 |
| Q14 | 4.6 | 4.4 | 4.8 |
| Q17 | 2.7 | 8.0 | 2.0 |
| Q18 | 3.0 | 8.0 | 2.4 |
| Q19 | 3.0 | 8.0 | 2.4 |
| Q20 | 3.1 | 4.8 | 2.5 |
| Q22 | 7.0 | 2.7 | 8.0 |
| Q23 | 1.1 | 4.8 | 1.5 |
| Q24 | 2.3 | 7.0 | 1.7 |
| Q25 | 0.5 | GND | 1.1 |
| Q26 | 1.4 | GND | 2.0 |
| Q27 | 0 | 5.0 | GND |
| Q28 | 2.3 | GND | 3.0 |
| Q29 | 1.5 | GND | 2.1 |
| Q30 | 2.4 | GND | 3.0 |
| Q31 | 0 | 4.7 | 0 |
| Q32 | 2.4 | 0 | GND |
| Q35 | 0 | 2.4 | GND |
| Q36 | 0.7 | 7.6 | 0.7 |
| Q37 | 0 | 7.6 | 0.7 |
| Q38 | 0.1 | 4.4 | GND |
| Q39 | 0 | GND | 0.7 |
| Q40 | 0 | 0.7 | GND |
| Q41 | 0 | 6.9 | GND |
| Q42 | 1.6 | 8.5 | 1.0 |
| Q43 | 0 | 0.6 | GND |

All voltages are in V.

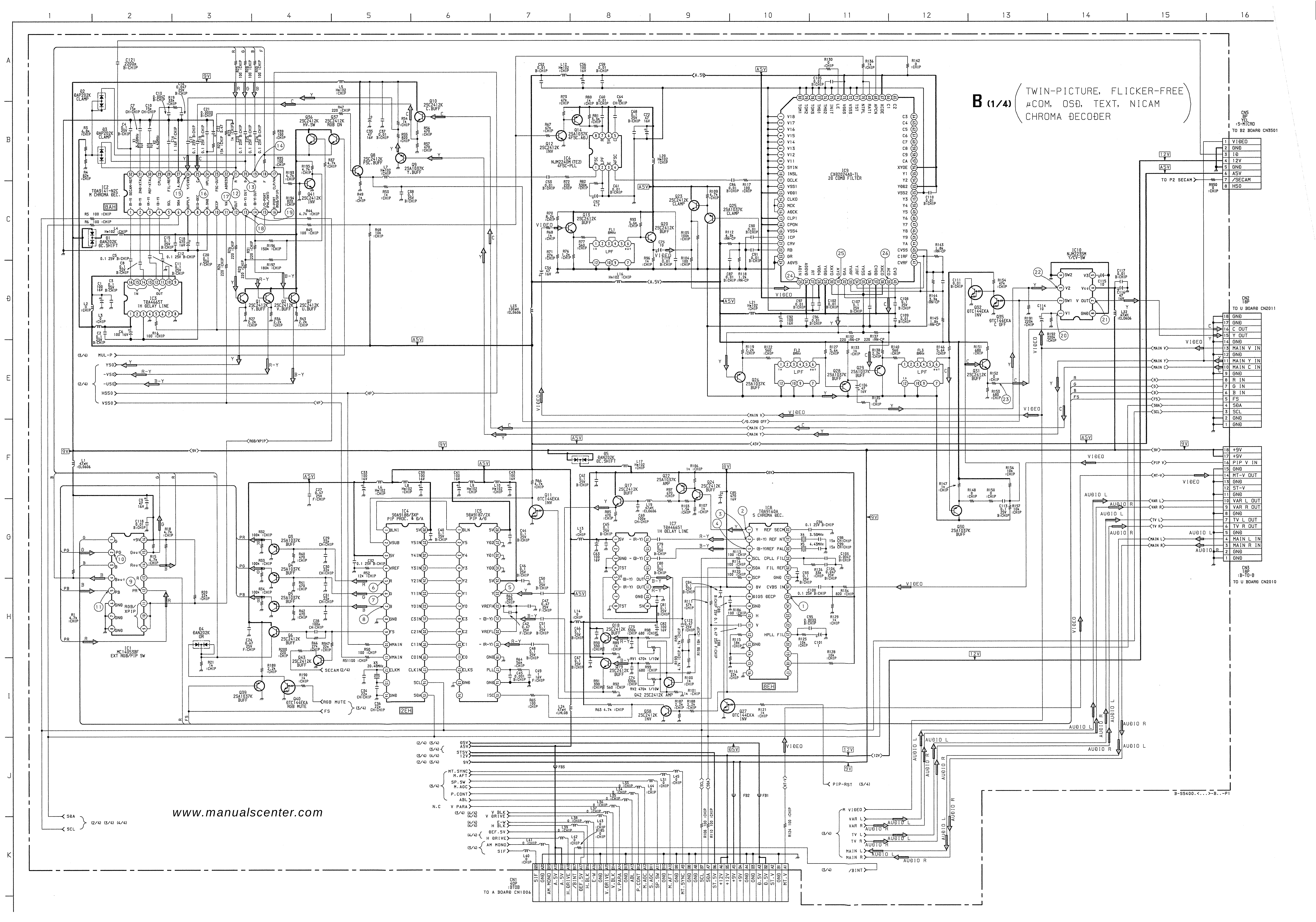
## B(1/4) BOARD IC VOLTAGE LIST

| | Pin | Voltages | | Pin | Voltages | | Pin | Voltages |
|---|---|---|---|---|---|---|---|---|
| IC1 | 1 | 0 | | 25 | 1.3 <1.7> | IC9 | 1 | GND |
| | 2 | 0.8 | | 26 | 0.8 | | 2 | GND |
| | 3 | 0 | | 27 | 1.0 | | 3 | GND |
| | 4 | 0.8 | | 28 | 4.8 | | 4 | GND |
| | 5 | 0.8 | IC5 | 1 | 4.1 | | 5 | GND |
| | 6 | GND | | 2 | 1.0 | | 6 | GND |
| | 7 | GND | | 3 | 0.8 | | 7 | GND |
| | 8 | GND | | 4 | 1.3 <1.7> | | 8 | GND |
| | 9 | 1.9 | | 5 | 1.9 | | 9 | GND |
| | 10 | 1.9 | | 6 | 2.0 (2.5) <1.1> | | 10 | GND |
| | 11 | 1.9 | | 7 | 1.8 (1.5) <1.3> | | 11 | 2.3 |
| | 12 | 0.8 | | 8 | 0.8 <1.3> | | 12 | GND |
| | 13 | 0 | | 9 | 1.0 <1.6> | | 13 | 4.8 |
| | 14 | 1.0 | | 10 | 0.8 <1.6> | | 14 | 0 |
| | 15 | 1.0 | | 11 | 1.0 <1.8> | | 15 | 0 |
| | 16 | 8.8 | | 12 | 2.5 | | 16 | 0 |
| IC2 | 1 | 2.5 | | 13 | GND | | 17 | 4.8 |
| | 2 | 2.5 | | 14 | – | | 18 | 4.8 |
| | 3 | 2.5 | | 15 | 4.4 | | 19 | GND |
| | 4 | 2.5 | | 16 | GND | | 20 | 4.6 |
| | 5 | 4.6 | | 17 | 2.0 (2.5) <1.9> | | 21 | 1 |
| | 6 | 4.7 | | 18 | GND | | 22 | 0.5 |
| | 7 | 7.6 | | 19 | 2.6 | | 23 | GND |
| | 8 | 5.0 | | 20 | 1.0 | | 24 | GND |
| | 9 | GND | | 21 | 2.5 | | 25 | 1.5 |
| | 10 | 0.7 | | 22 | 1.9 | | 26 | 4.8 |
| | 11 | 0.1 | | 23 | 2.3 | | 27 | 2.4 |
| | 12 | 3.2 | | 24 | 4.8 | | 28 | 4.8 |
| | 13 | 2.6 | | 25 | GND | | 29 | 4.8 |
| | 14 | 2.6 | | 26 | GND | | 30 | GND |
| | 15 | 0.3 | | 27 | GND | | 31 | 1.4 |
| | 16 | 0.3 | | 28 | 4.8 | | 32 | 3.0 |
| | 17 | 0.3 | IC6 | 1 | 2.4 | | 33 | 3.0 |
| | 18 | 0.8 | | 2 | 1.8 | | 34 | 3.0 |
| | 19 | 4.8 | | 3 | GND | | 35 | GND |
| | 20 | 4.8 | | 4 | 2.9 | | 36 | 1.1 |
| | 21 | 4.8 | | 5 | 3.0 | | 37 | 4.7 |
| | 22 | 3.2 | | 6 | 4.8 | | 38 | GND |
| | 23 | 0.1 | | 7 | 2.4 | | 39 | 1.5 |
| | 24 | 3.9 | IC7 | 1 | 4.8 | | 40 | 3.9 |
| | 25 | 0 | | 2 | – | | 41 | 3.0 |
| | 26 | 3.8 | | 3 | GND | | 42 | 3.0 |
| | 27 | 0 | | 4 | GND | | 43 | GND |
| | 28 | 3.4 | | 5 | 0.6 | | 44 | – |
| | 29 | 4.7 | | 6 | – | | 45 | – |
| | 30 | 2.3 | | 7 | – | | 46 | – |
| | 31 | 1.5 | | 8 | GND | | 47 | – |
| | 32 | 0.4 | | 9 | 4.8 | | 48 | – |
| IC3 | 1 | 4.8 | | 10 | GND | | 49 | – |
| | 2 | – | | 11 | 3.1 | | 50 | – |
| | 3 | GND | | 12 | 3.1 | | 51 | – |
| | 4 | GND | | 13 | – | | 52 | GND |
| | 5 | 0.7 | | 14 | 1.4 | | 53 | 4.8 |
| | 6 | – | | 15 | – | | 54 | – |
| | 7 | – | | 16 | 1.4 | | 55 | – |
| | 8 | GND | IC8 | 1 | 2.3 | | 56 | 4.8 |
| | 9 | 4.8 | | 2 | 2.2 | | 57 | – |
| | 10 | GND | | 3 | 2.1 | | 58 | – |
| | 11 | 3.0 | | 4 | 4.4 (4.6) <4.6> | | 59 | – |
| | 12 | 3.0 | | 5 | 4.5 (4.6) <4.3> | | 60 | – |
| | 13 | – | | 6 | 0.7 | | 61 | – |
| | 14 | 1.4 | | 7 | 8.0 | | 62 | – |
| | 15 | – | | 8 | 5.0 | | 63 | – |
| | 16 | 1.4 | | 9 | GND | | 64 | – |
| IC4 | 1 | 4.1 | | 10 | 0.3 | | 65 | – |
| | 2 | 0.3 | | 11 | 7.2 | | 66 | – |
| | 3 | 4.8 | | 12 | 3.8 | | 67 | 4.8 |
| | 4 | 1.6 | | 13 | 0 | | 68 | 4.8 |
| | 5 | 0 | | 14 | 2.1 | | 69 | 0.5 |
| | 6 | 0 | | 15 | GND | | 70 | 0.5 |
| | 7 | 0 | | 16 | GND | | 71 | GND |
| | 8 | GND | | 17 | – | | 72 | GND |
| | 9 | 0 | | 18 | 3.6 | | 73 | 4.8 |
| | 10 | 0.3 | | 19 | 0.3 | | 74 | 4.8 |
| | 11 | 0.1 | | 20 | 3.8 (4.0) | | 75 | GND |
| | 12 | 2.0 | | 21 | – | | 76 | GND |
| | 13 | 2.4 | | 22 | – | | 77 | GND |
| | 14 | GND | | 23 | – | | 78 | GND |
| | 15 | 4.7 | | 24 | – | | 79 | GND |
| | 16 | 4.7 | | 25 | 8.0 | | 80 | GND |
| | 17 | 2.5 | | 26 | 3.3 (3.8) | IC10 | 1 | 4.4 |
| | 18 | 1.0 <1.8> | | 27 | GND | | 2 | 0 |
| | 19 | 0.8 <1.6> | | 28 | 3.4 | | 3 | 4.4 |
| | 20 | 1.0 <1.6> | | 29 | 4.3 (4.7) <4.3> | | 4 | GND |
| | 21 | 0.8 <1.3> | | 30 | 2.1 (2.3) <2.1> | | 5 | 3.6 |
| | 22 | 1.8 (1.5) <1.3> | | 31 | 1.7 (1.5) <1.7> | | 6 | 8.8 |
| | 23 | 2.0 (2.5) <1.1> | | 32 | 3.8 (0.8) <3.8> | | 7 | 3.7 |
| | 24 | 1.9 | | | | | 8 | GND |

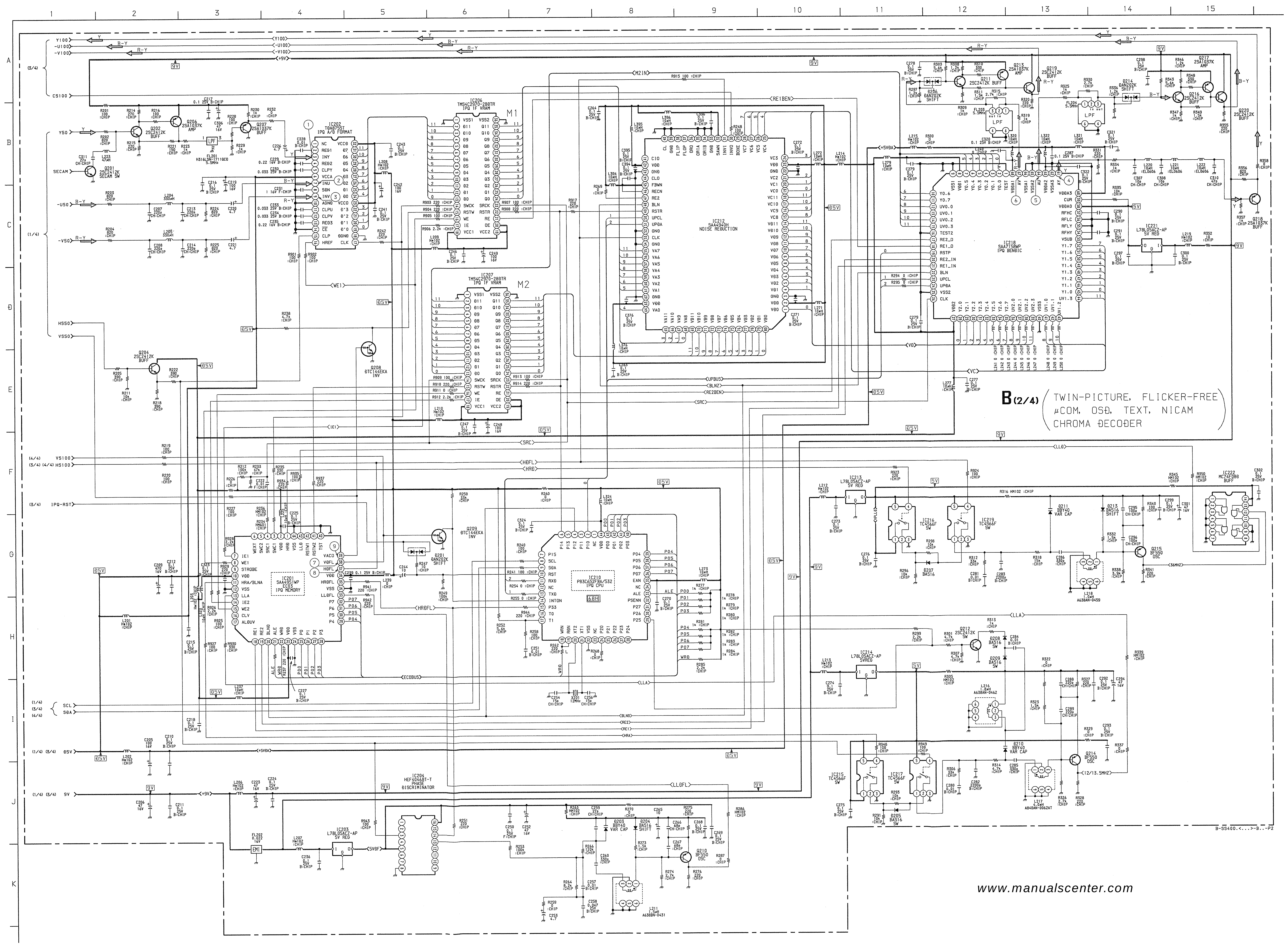
All voltages are in V.
– : Blank Pin

## WAVEFORMS B (1/4) BOARD

| CIRCUIT WAVEFORM REFERENCE | PAL | | SECAM | | NTSC 3.58 4.43 | |
|---|---|---|---|---|---|---|
| 1 | A | 1.2Vp-p(H) | B | 1.0Vp-p(H) | C | 1.1Vp-p(H) |
| 2 | D | 0.6Vp-p(H) | E | 0.4Vp-p(H) | D | 0.6Vp-p(H) |
| 3 | G | 0.7Vp-p(H) | G | 1.2Vp-p(H) | G | 0.6Vp-p(H) |
| 4 | H | 0.8Vp-p(H) | H | 1.5Vp-p(H) | H | 0.7Vp-p(H) |
| 5 | D | 1.2Vp-p(H) | E | 0.8Vp-p(H) | D | 0.9Vp-p(H) |
| 6 | I | 0.8Vp-p(H) | I | 1.0Vp-p(H) | I | 0.8Vp-p(H) |
| 7 | J | 0.9Vp-p(H) | J | 1.0Vp-p(H) | J | 0.7Vp-p(H) |
| 8 | K | 0.9Vp-p(H) | K | 0.9Vp-p(H) | K | 0.7Vp-p(H) |
| 9 | I | 0.9Vp-p(H) | I | 0.9Vp-p(H) | I | 0.7Vp-p(H) |
| 10 | J | 0.9Vp-p(H) | J | 0.9Vp-p(H) | J | 0.7Vp-p(H) |
| 11 | K | 0.8Vp-p(H) | K | 0.8Vp-p(H) | K | 0.8Vp-p(H) |
| 12 | I | 0.8Vp-p(H) | | – | I | 0.8Vp-p(H) |
| 13 | J | 0.8Vp-p(H) | | – | J | 0.8Vp-p(H) |
| 14 | K | 0.8Vp-p(H) | | – | K | 0.8Vp-p(H) |
| 15 | A | 1.2Vp-p(H) | | – | | – |
| 16 | N | 0.9Vp-p(H) | | – | | – |
| 17 | F | 1.3Vp-p(H) | F | 1.1Vp-p(H) | F | 1.1Vp-p(H) |
| 18 | G | 1.2Vp-p(H) | G | 1.0Vp-p(H) | G | 1.0Vp-p(H) |
| 19 | H | 1.7Vp-p(H) | H | 1.5Vp-p(H) | H | 1.3Vp-p(H) |
| 20 | C | 2.5Vp-p(H) | | – | | – |
| 21 | D | 2.3Vp-p(H) | | – | | – |
| 22 | C | 2.3Vp-p(H) | | – | | – |
| 23 | M | 1.8Vp-p(H) | | – | | – |
| 24 | C | 1.9Vp-p(H) | | – | | – |
| 25 | D | 2.7Vp-p(H) | | – | | – |
| 26 | N | 2.5Vp-p(H) | | – | | – |


B (1/4) (TWIN-PICTURE, FLICKER-FREE μCOM, OSD, TEXT, NICAM CHROMA DECODER)

A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
12V
A5V
9V
VIDEO
AUDIO L
AUDIO R


B(2/4) ( TWIN-PICTURE, FLICKER-FREE
µCOM, OSĐ, TEXT, NICAM
CHROMA ĐECOĐER )
IC201 SAA4951WP IPQ MEMORY
IC202 TDA9701T IPQ A/D FORMAT
IC204 HEF4046BT-T DISCRIMINATOR
IC206 TMS4C2970-280TR IPQ IF VRAM
M1
IC207 TMS4C2970-280TR IPQ IF VRAM
M2
IC210 P83C652FBA/532 IPQ CPU
IC212 SAA4942H NOISE REDUCTION
IC213 L78LR05A2-AP 5V REG
IC214 L78LR05A2-AP 5V REG
IC218 SAA7186WP IPQ BEN01C
IC221 L78LR05A2-AP 5V REG
IC222 MC74F08D BUFF
Q208 DTC144EKA INV
Q209 DTC144EKA INV
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K
www.manualscenter.com

## B(2/4) BOARD IC VOLTAGE LIST

| | Pin | Voltages | | Pin | Voltages | | Pin | Voltages | | Pin | Voltages | | Pin | Voltages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IC201 | 1 | 2.6 | | 3 | 0.4 | | 32 | 1.8 | | 33 | GND | | 13 | 2.1 |
| | 2 | 4.8 | | 4 | – | | 33 | 1.6 | | 34 | GND | | 14 | 2.1 |
| | 3 | 1.7 | | 5 | 5.0 | | 34 | 1.8 | | 35 | GND | | 15 | 1.5 |
| | 4 | 2.4 | | 6 | – | | 35 | 1.2 | | 36 | – | | 16 | GND |
| | 5 | – | | 7 | – | | 36 | GND | | 37 | – | | 17 | 3.7 |
| | 6 | – | | 8 | GND | IC210 | 1 | – | | 38 | – | | 18 | 3.7 |
| | 7 | 4.8 | | 9 | – | | 2 | 0 | | 39 | GND | | 19 | 0 |
| | 8 | 3.8 | | 10 | – | | 3 | 4.8 | | 40 | GND | | 20 | 3.7 |
| | 9 | – | | 11 | – | | 4 | 4.2 | | 41 | – | | 21 | 3.7 |
| | 10 | 4.8 | | 12 | – | | 5 | 0 | | 42 | 4.8 | | 22 | 3.7 |
| | 11 | 2.5 | | 13 | 2.7 | | 6 | 0.1 | | 43 | GND | | 23 | 4.8 |
| | 12 | GND | | 14 | 2.5 | | 7 | 0 | | 44 | – | | 24 | 4.8 |
| | 13 | 1.1 | | 15 | – | | 8 | 0 | | 45 | 4.8 | | 25 | GND |
| | 14 | 4.8 | | 16 | 5.0 | | 9 | 4.8 | | 46 | 4.8 | | 26 | 2.5 |
| | 15 | 1.9 | IC206 | 1 | GND | | 10 | 0 | | 47 | 4.2 | | 27 | 4.8 |
| | 16 | – | | 2 | 1.4 | | 11 | 4.8 | | 48 | 0 | | 28 | 1.8 |
| | 17 | – | | 3 | 1.4 | | 12 | – | | 49 | 4.7 | | 29 | 1.8 |
| | 18 | 3.7 | | 4 | 1.4 | | 13 | 4.8 | | 50 | 4.7 | | 30 | 1.8 |
| | 19 | 3.7 | | 5 | 2.7 | | 14 | 4.8 | | 51 | 4.7 | | 31 | 2.0 |
| | 20 | 4.2 | | 6 | 2.2 | | 15 | 2.5 | | 52 | GND | | 32 | 2.3 |
| | 21 | 1.7 | | 7 | 2.2 | | 16 | 4.5 | | 53 | 2.5 | | 33 | 1.0 |
| | 22 | 4.8 | | 8 | 2.0 | | 17 | 0.1 | | 54 | GND | | 34 | 1.0 |
| | 23 | 4.8 | | 9 | 2.2 | | 18 | 4.8 | | 55 | 1.0 | | 35 | 1.0 |
| | 24 | GND | | 10 | 1.4 | | 19 | 4.8 | | 56 | 1.0 | | 36 | 1.6 |
| | 25 | 4.8 | | 11 | 1.7 | | 20 | 0 | | 57 | 1.0 | | 37 | 1.6 |
| | 26 | 4.8 | | 12 | 1.4 | | 21 | 2.2 | | 58 | 2.4 | | 38 | 1.6 |
| | 27 | 4.8 | | 13 | 1.7 | | 22 | GND | | 59 | 2.1 | | 39 | 1.0 |
| | 28 | 4.8 | | 14 | 1.7 | | 23 | – | | 60 | 1.8 | | 40 | GND |
| | 29 | 4.8 | | 15 | 4.8 | | 24 | 0 | | 61 | 2.1 | | 41 | 1.6 |
| | 30 | 4.8 | | 16 | 3.8 | | 25 | 4.5 | | 62 | GND | | 42 | 1.6 |
| | 31 | 4.8 | | 17 | 4.8 | | 26 | 0 | | 63 | 4.8 | | 43 | 1.6 |
| | 32 | 4.8 | | 18 | 4.8 | | 27 | 0 | | 64 | 2.1 | | 44 | 1.1 |
| | 33 | 1.5 | | 19 | 4.8 | | 28 | 0 | | 65 | 1.2 | | 45 | 1.8 |
| | 34 | GND | | 20 | 4.5 | | 29 | 3.7 | | 66 | 1.8 | | 46 | 1.8 |
| | 35 | 2.5 | | 21 | 3.3 | | 30 | – | | 67 | 1.8 | | 47 | 1.8 |
| | 36 | 4.8 | | 22 | 0 | | 31 | 0 | | 68 | 1.8 | | 48 | 1.8 |
| | 37 | 0.4 | | 23 | 2.5 | | 32 | – | | 69 | 1.2 | | 49 | 2.3 |
| | 38 | 0 | | 24 | 2.5 | | 33 | 1.7 | | 70 | 1.8 | | 50 | 1.0 |
| | 39 | 0 | | 25 | 2.5 | | 34 | – | | 71 | 1.8 | | 51 | 1.0 |
| | 40 | GND | | 26 | 2.5 | | 35 | 5.0 | | 72 | 1.8 | | 52 | 1.0 |
| | 41 | 0 | | 27 | 1.8 | | 36 | 4.8 | | 73 | 1.1 | | 53 | GND |
| | 42 | 0 | | 28 | 2 | | 37 | 4.8 | | 74 | 1.1 | | 54 | 2.3 |
| | 43 | 2.0 | | 29 | 1.9 | | 38 | 4.8 | | 75 | 1.1 | | 55 | 2.3 |
| | 44 | GND | | 30 | 1.9 | | 39 | 4.8 | | 76 | 2.7 | | 56 | GND |
| IC202 | 1 | – | | 31 | 2.2 | | 40 | 4.8 | | 77 | 2.0 | | 57 | 0 |
| | 2 | 2.8 | | 32 | 2.5 | | 41 | 4.8 | | 78 | 2.0 | | 58 | 9.0 |
| | 3 | 3.3 | | 33 | 1.0 | | 42 | 4.8 | | 79 | 2.0 | | 59 | 1.1 |
| | 4 | 1.8 | | 34 | 1.0 | | 43 | 4.8 | | 80 | 2.0 | | 60 | 4.8 |
| | 5 | 3.6 | | 35 | 1.0 | | 44 | 5.0 | IC213 | I | 8.8 | | 61 | 0.2 |
| | 6 | 4.8 | | 36 | GND | IC212 | 1 | 1.8 | | G | GND | | 62 | GND |
| | 7 | 3.3 | IC207 | 1 | GND | | 2 | 4.8 | | O | 5.0 | | 63 | 4.8 |
| | 8 | 3.3 | | 2 | 1.5 | | 3 | GND | IC214 | I | 8.8 | | 64 | 1.3 |
| | 9 | 3.3 | | 3 | 2.1 | | 4 | 1.8 | | G | GND | | 65 | GND |
| | 10 | GND | | 4 | 2.1 | | 5 | 1.8 | | O | 5.0 | | 66 | GND |
| | 11 | 3.3 | | 5 | 2.3 | | 6 | 2.0 | IC215 | 1 | 5.0 | | 67 | 1.3 |
| | 12 | 3.3 | | 6 | 1.3 | | 7 | 2.3 | | 2 | 2.6 | | 68 | 5.0 |
| | 13 | 1.8 | | 7 | 1.3 | | 8 | 1.0 | | 3 | GND | IC219 | 1 | 4.2 |
| | 14 | GND | | 8 | 1.3 | | 9 | 1.0 | | 4 | 2.5 | | 2 | 2.6 |
| | 15 | 0.4 | | 9 | 0 | | 10 | 1.0 | | 5 | 5.0 | | 3 | GND |
| | 16 | 3.8 | | 10 | 2.7 | | 11 | 1.6 | IC216 | 1 | 5.0 | | 4 | 0.4 |
| | 17 | 1.6 | | 11 | 2.5 | | 12 | 1.6 | | 2 | 2.6 | | 5 | 5.0 |
| | 18 | GND | | 12 | 2.3 | | 13 | 1.6 | | 3 | GND | IC221 | I | 8.8 |
| | 19 | 1.7 | | 13 | 2.5 | | 14 | 1.0 | | 4 | 2.5 | | G | GND |
| | 20 | 1.4 | | 14 | 2.5 | | 15 | 1.6 | | 5 | 5.0 | | O | 5.0 |
| | 21 | 1.7 | | 15 | 0 | | 16 | 1.6 | IC217 | 1 | 3.0 | IC222 | 1 | GND |
| | 22 | 1.4 | | 16 | 4.8 | | 17 | 1.6 | | 2 | 3.6 | | 2 | GND |
| | 23 | 4.8 | | 17 | 4.8 | | 18 | 1.1 | | 3 | GND | | 3 | – |
| | 24 | 2.2 | | 18 | 4.8 | | 19 | 1.8 | | 4 | 0.4 | | 4 | GND |
| | 25 | 2.0 | | 19 | 4.8 | | 20 | 1.8 | | 5 | 5.0 | | 5 | GND |
| | 26 | 2.2 | | 20 | 4.8 | | 21 | 1.8 | IC218 | 1 | GND | | 6 | – |
| | 27 | 2.2 | | 21 | 3.7 | | 22 | GND | | 2 | 2.5 | | 7 | GND |
| | 28 | 2.7 | | 22 | 0 | | 23 | 4.8 | | 3 | 2.3 | | 8 | – |
| | 29 | 1.4 | | 23 | 2.5 | | 24 | 1.8 | | 4 | 2.5 | | 9 | GND |
| | 30 | 1.4 | | 24 | 2.0 | | 25 | 2.3 | | 5 | 2.7 | | 10 | GND |
| | 31 | 1.4 | | 25 | 2.0 | | 26 | 0.9 | | 6 | 0 | | 11 | 1.5 |
| | 32 | 4.8 | | 26 | 2.0 | | 27 | 1.0 | | 7 | 1.3 | | 12 | 1.9 |
| IC203 | I | 9.0 | | 27 | 2.0 | | 28 | 1.0 | | 8 | 5 | | 13 | 5.0 |
| | G | GND | | 28 | 2.7 | | 29 | – | | 9 | GND | | 14 | 5.0 |
| | O | 5.0 | | 29 | 1.1 | | 30 | 3.2 | | 10 | 1.3 | | | |
| IC204 | 1 | – | | 30 | 1.1 | | 31 | 0.4 | | 11 | 1.3 | | | |
| | 2 | – | | 31 | 1.1 | | 32 | 4.8 | | 12 | 2.3 | | | |

All voltages are in V.

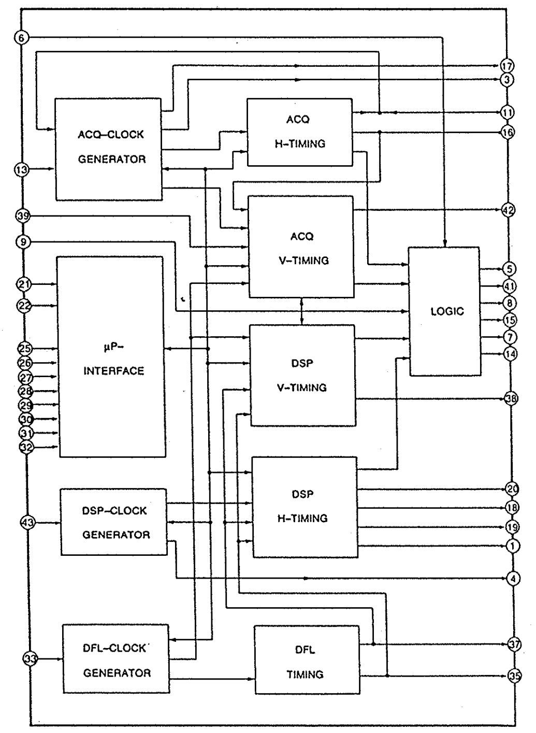
–: Blank Pin

## B(2/4) BOARD TRANSISTOR VOLTAGE LIST

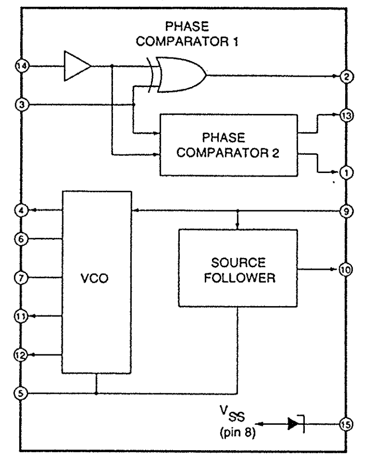
| | B | C | E |
|---|---|---|---|
| Q201 | 0.6 | 2.5 | GND |
| Q202 | 2.5 | 6.8 | 1.7 |
| Q204 | 0.3 | 4.8 | 0.3 |
| Q206 | 6.8 | 2.8 | 7.5 |
| Q207 | 1.4 | GND | 2.0 |
| Q208 | 0 | 4.9 | GND |
| Q209 | 0 | 4.9 | GND |
| Q210 | 3.1 | 1.5 | 3.7 |
| Q211 | 2.0 | 8.4 | 1.4 |
| Q212 | 0.8 | 0 | GND |
| Q213 | 8.2 | 3.3 | 8.8 |
| Q214 | 3.4 | 1.1 | 4.0 |
| Q215 | 3.4 | 1.9 | 4.3 |
| Q216 | 2.0 | 8.4 | 1.4 |
| Q217 | 8.4 | 3.0 | 8.8 |
| Q218 | 0.4 | GND | 1.1 |
| Q219 | 3.3 | 8.8 | 2.7 |
| Q220 | 3.0 | 8.8 | 2.4 |

All voltages are in V.

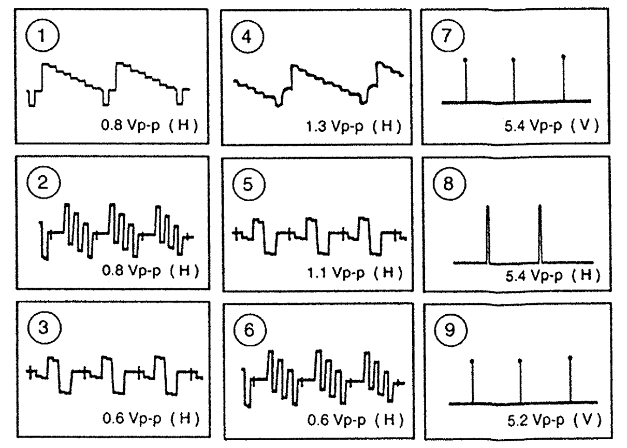
## B (2/4) BOARD : IC201 SAA4951WP


ACQ-CLOCK GENERATOR
ACQ H-TIMING
ACQ V-TIMING
µP-INTERFACE
LOGIC
DSP V-TIMING
DSP-CLOCK GENERATOR
DSP H-TIMING
DFL-CLOCK GENERATOR
DFL TIMING
6 13 39 9 21 22 25 26 27 28 29 30 31 32 43 33
17 3 11 16 42 5 41 8 15 7 14 38 20 18 19 1 4 37 35

## B (2/4) BOARD : IC204 HEF4046BT

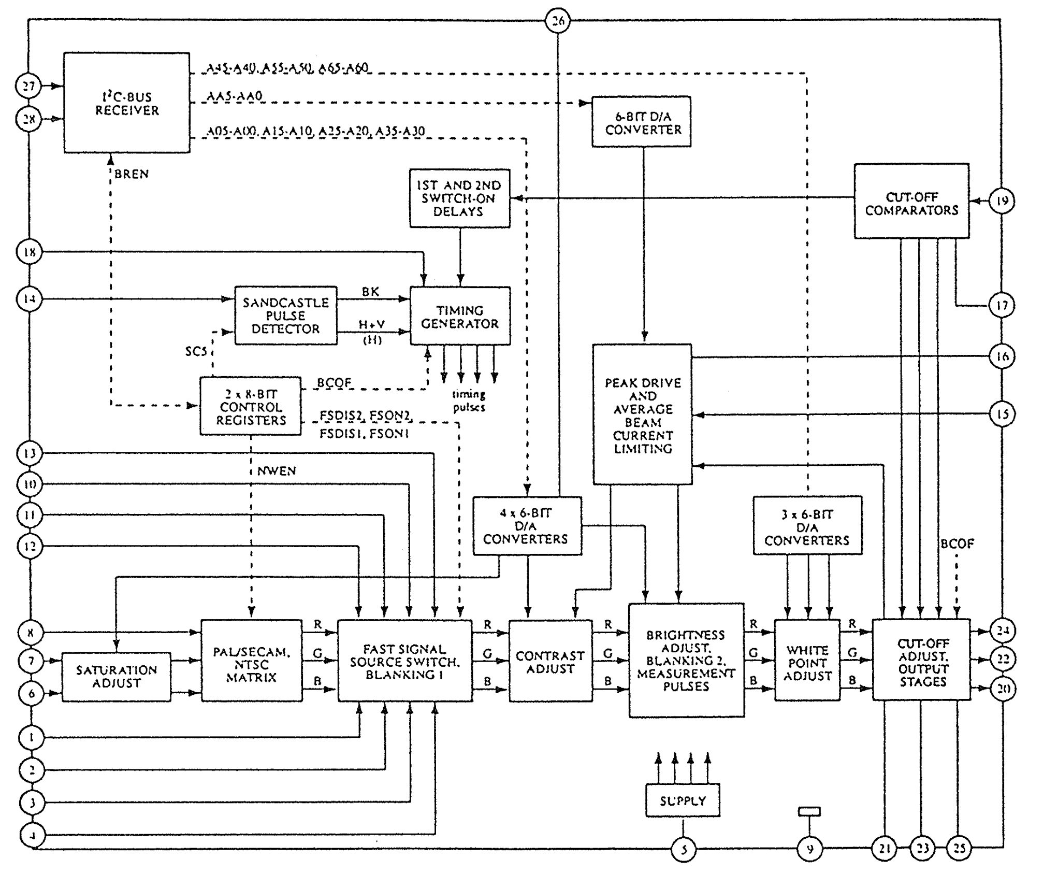

PHASE COMPARATOR 1
PHASE COMPARATOR 2
VCO
SOURCE FOLLOWER
$V_{SS}$ (pin 8)
14 3 4 6 7 11 12 5 2 13 1 9 10 15

## • B (2/4) BOARD WAVEFORMS

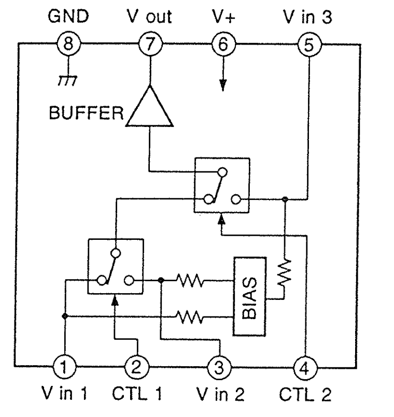


Schematic diagrams
← B (2/4) board B (3/4) board →

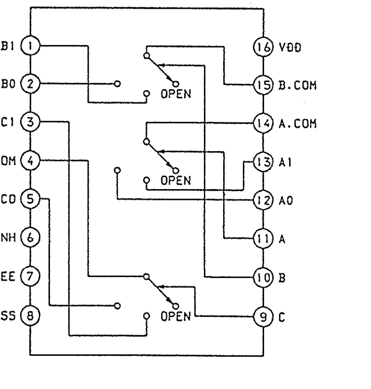
## B (3/4) BOARD : IC408 TDA4780


I²C BUS RECEIVER
8-BIT D/A CONVERTER
CUT-OFF COMPARATORS
1ST AND 2ND SWITCH-ON DELAYS
SANDCASTLE PULSE DETECTOR
TIMING GENERATOR
2 x 8-BIT CONTROL REGISTERS
PEAK DRIVE AND AVERAGE BEAM CURRENT LIMITING
4 x 6-BIT D/A CONVERTERS
3 x 6-BIT D/A CONVERTERS
SATURATION ADJUST
PAL/SECAM, NTSC MATRIX
FAST SIGNAL SOURCE SWITCH, BLANKING 1
CONTRAST ADJUST
BRIGHTNESS ADJUST, BLANKING 2, MEASUREMENT PULSES
WHITE POINT ADJUST
CUT-OFF ADJUST OUTPUT STAGES
SUPPLY
BREN
BCOF
NWEN

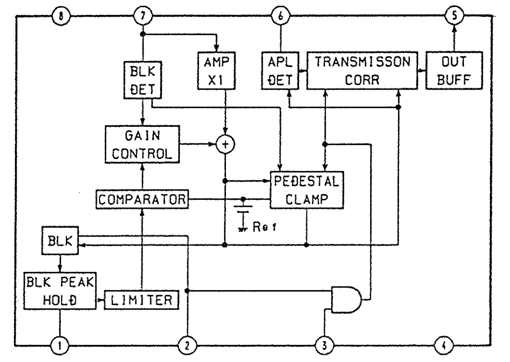
## B (3/4) BOARD : IC413 NJM2234M


GND
V out
V+
V in 3
BUFFER
BIAS
V in 1
CTL 1
V in 2
CTL 2

## B (3/4) BOARD : IC414 MC7HC4053F-T2


B1
B0
C1
C.COM
C0
INH
VEE
VSS
VDD
B.COM
A.COM
A1
A0
A
B
C
OPEN

## B (3/4) BOARD : IC601 CX20125


BLK DET
AMP X1
APL DET
TRANSMISSION CORR
OUT BUFF
GAIN CONTROL
PEDESTAL CLAMP
COMPARATOR
BLK
BLK PEAK HOLD
LIMITER

## B(3/4) BOARD IC VOLTAGE LIST

| | Pin | Voltages | | Pin | Voltages | | Pin | Voltages | | Pin | Voltages |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IC401 | 1 | GND | | 57 | 0.2 | | 15 | 2.5 | | 22 | 1.8 |
| | 2 | GND | | 58 | 0 | | 16 | 2.5 | | 23 | 4.5 |
| | 3 | GND | | 59 | 0.2 | | 17 | – | | 24 | 1.2 |
| | 4 | GND | | 60 | 0.2 | | 18 | – | | 25 | 4.3 |
| | 5 | 5.0 | | 61 | 4.7 | | 19 | 4.7 | | 26 | 4.3 |
| | 6 | 5.0 | | 62 | – | | 20 | 4.4 | | 27 | 11.8 |
| | 7 | GND | | 63 | – | | 21 | – | | 28 | 2.1 |
| | 8 | 5.0 | | 64 | – | | 22 | – | | 29 | 9.7 |
| IC402 | 1 | 1.8 | | 65 | – | | 23 | – | | 30 | 2.3 |
| | 2 | 4.9 | | 66 | GND | | 24 | – | IC410 | 1 | 4.8 |
| | 3 | 4.7 | | 67 | 4.8 | | 25 | 0 | | 2 | 0.7 |
| | 4 | – | | 68 | – | | 26 | 0 | | 3 | 4.8 |
| | 5 | – | IC404 | 1 | 5.0 | | 27 | 2.5 | | 4 | 4.8 |
| | 6 | – | | 2 | 0 | | 28 | 0 | | 5 | GND |
| | 7 | – | | 3 | 0 | | 29 | 5.1 | | 6 | GND |
| | 8 | – | | 4 | 0 | | 30 | – | | 7 | 4.8 |
| | 9 | 2.5 | | 5 | – | | 31 | – | | 8 | GND |
| | 10 | 2.5 | | 6 | – | | 32 | – | | 9 | 4.5 |
| | 11 | 2.5 | | 7 | 0 | | 33 | – | | 10 | 0.7 |
| | 12 | 2.5 | | 8 | 0 | | 34 | 4.9 | | 11 | 4.4 |
| | 13 | 4.8 | | 9 | 0 | | 35 | GND | | 12 | – |
| | 14 | 2.5 | | 10 | 0 | | 36 | 0 | | 13 | – |
| | 15 | 2.5 | | 11 | 0 | | 37 | 0 | | 14 | – |
| | 16 | 2.5 | | 12 | 5.0 | | 38 | 0 | | 15 | – |
| | 17 | 2.5 | | 13 | 5.0 | | 39 | 0 | | 16 | 4.8 |
| | 18 | 2.5 | | 14 | 5.0 | | 40 | GND | IC411 | 1 | 1.6 |
| | 19 | – | | 15 | 5.0 | | 41 | 4.9 | | 2 | 5.0 |
| | 20 | – | | 16 | 5.0 | | 42 | 0.4 | | 3 | 5.0 |
| | 21 | – | | 17 | 5.0 | | 43 | GND | | 4 | GND |
| | 22 | 2.5 | | 18 | 5.0 | | 44 | – | | 5 | 4.3 |
| | 23 | – | | 19 | 0.2 | IC406 | 1 | 5.0 | | 6 | 5.0 |
| | 24 | 4.8 | | 20 | 5.0 | | 2 | 5.0 | | 7 | 0.8 |
| | 25 | 1.8 | | 21 | 0.4 | | 3 | GND | | 8 | 8.8 |
| | 26 | GND | | 22 | 0 | IC407 | 1 | 6.0 | IC412 | 1 | 3.0 |
| IC403 | 1 | – | | 23 | 0 | | 2 | 11.4 | | 2 | 3.0 |
| | 2 | – | | 24 | 5.0 | | 3 | 6.0 | | 3 | 3.0 |
| | 3 | – | | 25 | 5.0 | | 4 | GND | | 4 | 3.0 |
| | 4 | – | | 26 | GND | | 5 | 1.3 | | 5 | 0.5 |
| | 5 | – | | 27 | 0 | | 6 | 0.8 | | 6 | 0.5 |
| | 6 | – | | 28 | 2.5 | | 7 | 0.8 | | 7 | GND |
| | 7 | – | | 29 | 2.5 | | 8 | 1.3 | | 8 | 3.0 |
| | 8 | 4.4 | | 30 | 5.0 | IC408 | 1 | 5.2 | | 9 | 3.0 |
| | 9 | 4.4 | | 31 | 0 | | 2 | 5.2 | | 10 | 3.0 |
| | 10 | GND | | 32 | – | | 3 | 5.2 | | 11 | 3.0 |
| | 11 | 4.8 | | 33 | GND | | 4 | 5.2 | | 12 | 0.4 |
| | 12 | GND | | 34 | 5.0 | | 5 | 8.2 | | 13 | 0.4 |
| | 13 | – | | 35 | 5.0 | | 6 | 4.1 | | 14 | 4.8 |
| | 14 | – | | 36 | 2.5 | | 7 | 4.1 | IC413 | 1 | 5.4 |
| | 15 | GND | | 37 | 5.0 | | 8 | 3.9 | | 2 | 0 |
| | 16 | GND | | 38 | 0 | | 9 | GND | | 3 | 5.4 |
| | 17 | – | | 39 | 2.7 | | 10 | 5.2 | | 4 | 0 |
| | 18 | – | | 40 | 2.7 | | 11 | 5.2 | | 5 | 5.4 |
| | 19 | GND | | 41 | 0 | | 12 | 5.2 | | 6 | 8.8 |
| | 20 | 2.5 | | 42 | 0 | | 13 | 0 | | 7 | 4.7 |
| | 21 | 2.1 | | 43 | 0 | | 14 | 1.3 | | 8 | GND |
| | 22 | GND | | 44 | 0 | | 15 | 4.1 | IC414 | 1 | 2.5 |
| | 23 | 0 | | 45 | 0 | | 16 | 3.3 | | 2 | 2.5 |
| | 24 | 1.6 | | 46 | 0 | | 17 | 5.2 | | 3 | 2.5 |
| | 25 | 1.6 | | 47 | 4.8 | | 18 | 2.3 | | 4 | 2.5 |
| | 26 | 4.8 | | 48 | 5.0 | | 19 | 1.6 | | 5 | 2.5 |
| | 27 | GND | | 49 | 4.7 | | 20 | 2.0 | | 6 | GND |
| | 28 | 3.9 | | 50 | 5.0 | | 21 | 2.9 | | 7 | GND |
| | 29 | 2.7 | | 51 | – | | 22 | 2.0 | | 8 | GND |
| | 30 | 3.9 | | 52 | 3.6 | | 23 | 2.9 | | 9 | 0 |
| | 31 | 3.9 | | 53 | 3.6 | | 24 | 2.3 | | 10 | 0 |
| | 32 | GND | | 54 | 3.6 | | 25 | 3.1 | | 11 | 0 |
| | 33 | 3.9 | | 55 | GND | | 26 | 4.5 | | 12 | 2.6 |
| | 34 | 3.9 | | 56 | 5.0 | | 27 | 4.5 | | 13 | 2.6 |
| | 35 | GND | | 57 | 5.0 | | 28 | 4.5 | | 14 | 2.6 |
| | 36 | 3.9 | | 58 | 5.0 | IC409 | 1 | GND | | 15 | 2.6 |
| | 37 | 3.9 | | 59 | 0.5 | | 2 | 4.4 | | 16 | 4.8 |
| | 38 | GND | | 60 | 0.5 | | 3 | 4.1 | IC415 | 1 | 0.8 |
| | 39 | 3.9 | | 61 | 0 | | 4 | 1.4 | | 2 | 4.8 |
| | 40 | 3.9 | | 62 | – | | 5 | 0.7 | | 3 | 4.8 |
| | 41 | 3.9 | | 63 | – | | 6 | 0.7 | | 4 | GND |
| | 42 | 3.9 | | 64 | 0 | | 7 | 7.0 | | 5 | 4.8 |
| | 43 | GND | IC405 | 1 | 2.8 | | 8 | 7.0 | | 6 | 4.8 |
| | 44 | 7.3 | | 2 | 0 | | 9 | 6.1 | | 7 | 0.8 |
| | 45 | 8.4 | | 3 | 1.8 | | 10 | 5.7 | | 8 | 8.1 |
| | 46 | 7.3 | | 4 | 4.9 | | 11 | 5.7 | IC601 | 1 | 8.4 |
| | 47 | 3.9 | | 5 | 4.7 | | 12 | 11.8 | | 2 | 0.8 |
| | 48 | 3.9 | | 6 | 4.8 | | 13 | 2.5 | | 3 | 0.6 |
| | 49 | GND | | 7 | 2.5 | | 14 | 6.2 | | 4 | GND |
| | 50 | – | | 8 | 2.5 | | 15 | 4.1 | | 5 | 7.6 |
| | 51 | – | | 9 | 2.5 | | 16 | 2.5 | | 6 | 0.1 |
| | 52 | GND | | 10 | 2.5 | | 17 | GND | | 7 | 5.8 |
| | 53 | 3.9 | | 11 | 2.5 | | 18 | 2.0 | | 8 | 11.8 |
| | 54 | 3.9 | | 12 | 2.5 | | 19 | 11.8 | | | |
| | 55 | GND | | 13 | 2.5 | | 20 | 2.0 | | | |
| | 56 | 0.2 | | 14 | 2.5 | | 21 | 1.8 | | | |

All voltages are in V.
– : Blank Pin

## B(3/4) BOARD TRANSISTOR VOLTAGE LIST

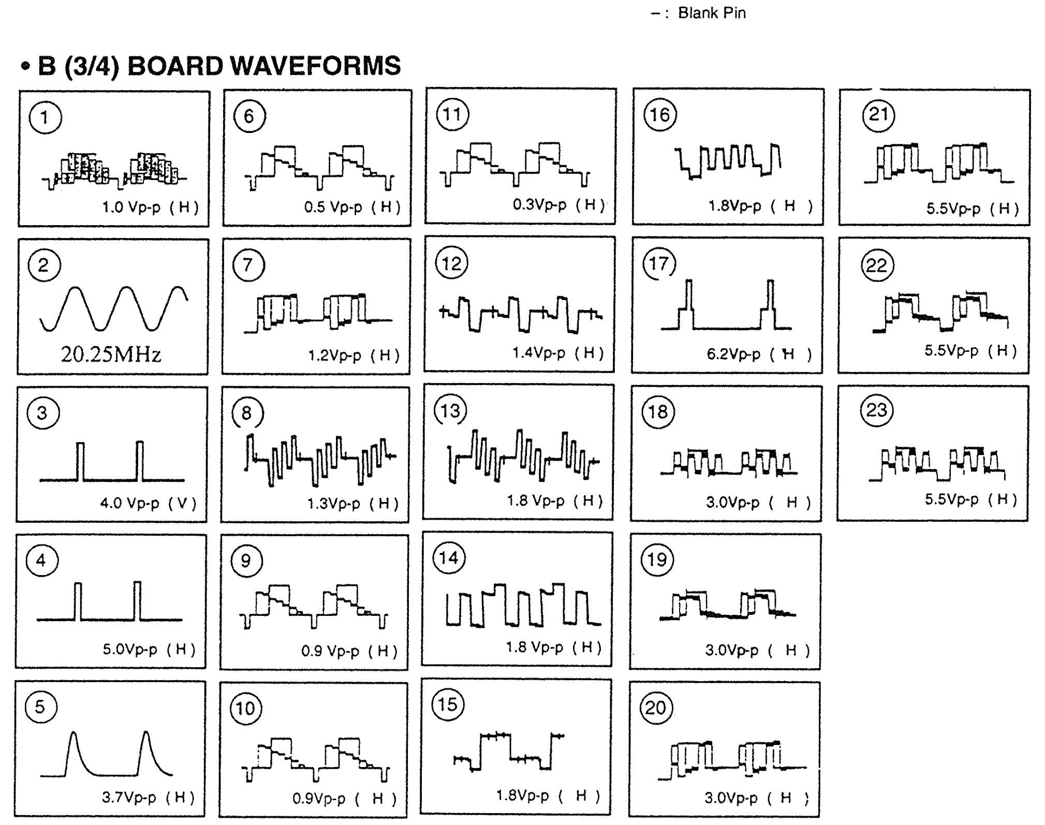
| | B | C | E |
|---|---|---|---|
| Q401 | 6.3 | 11.8 | 5.7 |
| Q402 | 11.3 | 6.3 | 11.8 |
| Q403 | 6.4 | 11.6 | 5.8 |
| Q404 | 6.2 | 11.8 | 5.5 |
| Q405 | 3.0 | 11.3 | 2.4 |
| Q406 | 5.7 | 11.8 | 5.0 |
| Q407 | 3.9 | GND | 4.5 |
| Q408 | 4.0 | GND | 4.5 |
| Q409 | 0 | 5.0 | GND |
| Q410 | 2.6 | GND | 3.2 |
| Q411 | 3.1 | 0 | GND |
| Q412 | 0 | 3.1 | GND |
| Q413 | 0.2 | GND | 0.8 |
| Q414 | 0.2 | GND | 0.8 |
| Q415 | 0.2 | GND | 0.8 |
| Q416 | 0.2 | GND | 0.8 |
| Q417 | 5.5 | GND | 6.3 |
| Q418 | 11.3 | 6.2 | 11.8 |
| Q419 | 4.4 | 0.7 | GND |
| Q420 | 0.6 | 4.5 | GND |
| Q421 | 0 | 2.6 | GND |
| Q422 | 0 | 2.6 | GND |
| Q423 | 0 | 2.6 | GND |
| Q424 | 0.7 | 0 | GND |
| Q425 | 2.1 | GND | 2.4 |
| Q426 | 2.0 | GND | 2.4 |
| Q427 | 10.1 | 2.5 | 10.8 |
| Q428 | 2.5 | GND | 2.6 |
| Q429 | -1.6 | 0 | GND |
| Q430 | 1.3 | 8.8 | 1.3 |
| Q431 | 3.8 | GND | 4.4 |
| Q432 | 9.0 | 1.4 | 9.2 |
| Q433 | 2.4 | 4.8 | 1.8 |
| Q434 | 2.5 | 4.8 | 1.8 |
| Q435 | 6.9 | 6.9 | 6.3 |
| Q436 | 3.3 | 6.3 | 2.7 |
| Q437 | 4.6 | 8.8 | 3.9 |
| Q438 | 4.4 | 8.8 | 3.8 |
| Q439 | 6.9 | 6.9 | 6.3 |
| Q440 | 4.3 | GND | 4.8 |
| Q441 | 1.1 | 2.5 | 0.5 |
| Q442 | 3.3 | 6.3 | 2.5 |
| Q443 | 6.3 | 8.8 | 5.6 |
| Q444 | 0 | 0 | 0 |
| Q445 | 4.4 | 8.1 | 3.8 |
| Q446 | 5.0 | 8.8 | 4.5 |
| Q447 | 3.9 | GND | 4.5 |
| Q448 | 2.2 | 5.6 | 1.6 |
| Q449 | 3.1 | 4.8 | 2.4 |
| Q450 | 10.1 | 10.1 | 10.7 |
| Q451 | 6.3 | 8.8 | 5.6 |
| Q452 | 2.7 | 8.8 | 2.0 |
| Q453 | 1.3 | GND | 1.7 |
| Q454 | 3.1 | 4.8 | 2.5 |
| Q455 | 4.7 | 8.8 | 4.0 |
| Q456 | -1.6 | 0 | GND |
| Q457 | 3.0 | 4.8 | 2.5 |
| Q458 | 5.4 | 8.8 | 4.7 |
| Q459 | 2.5 | GND | 3.0 |
| Q460 | 2.0 | 5.4 | 1.4 |
| Q461 | 3.1 | 5.7 | 2.5 |
| Q462 | 1.8 | GND | 2.5 |
| Q463 | 5.7 | 8.8 | 5.1 |
| Q464 | 2.1 | 6.2 | 1.5 |
| Q465 | 2.6 | 4.8 | 2.0 |
| Q466 | 6.2 | 8.8 | 5.6 |
| Q467 | 1.0 | GND | 1.7 |
| Q468 | 0.5 | 2.6 | GND |
| Q469 | 0.5 | 2.6 | GND |
| Q470 | 0.5 | 0 | GND |
| Q471 | 0 | 0 | 0 |
| Q472 | 0.6 | 0 | GND |
| Q473 | 0 | 0 | GND |
| Q474 | 0 | 0 | GND |
| Q475 | 0.7 | 11.8 | 0 |
| Q476 | 0 | 0 | GND |
| Q477 | 0 | 0 | GND |
| Q479 | 4.4 | 8.1 | 3.8 |
| Q601 | 2.6 | GND | 3.2 |
| Q602 | 3.8 | 3.2 | 4.6 |
| Q603 | 0.8 | 2.0 | 0.3 |
| Q604 | 2.5 | 0.9 | 3.0 |
| Q605 | 2.0 | GND | 2.7 |
| Q606 | 0.8 | 0.9 | 0.3 |
| Q607 | 7.6 | 11.8 | 7.0 |

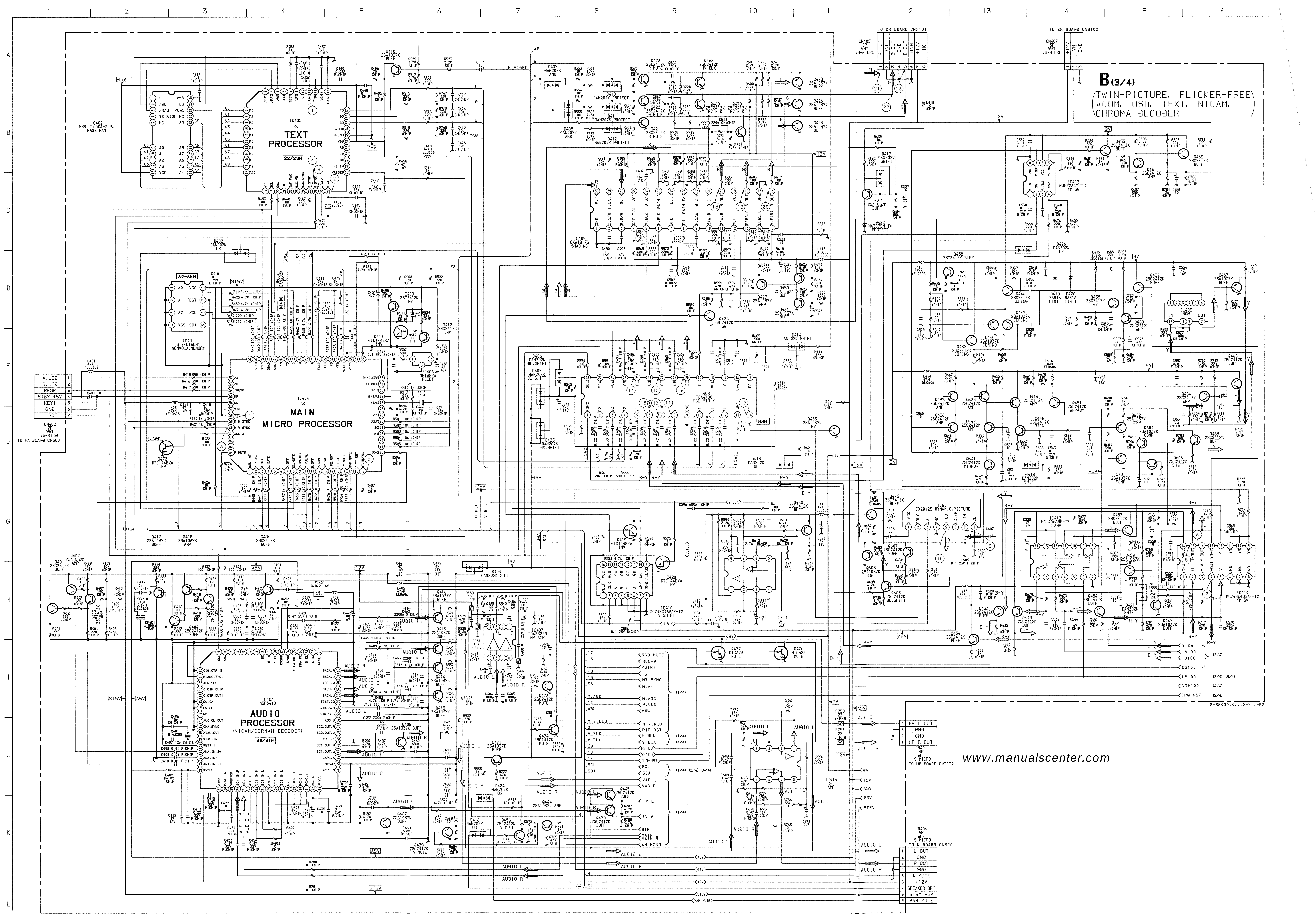
All voltages are in V.

## B(3/4) BOARD * MARK LIST

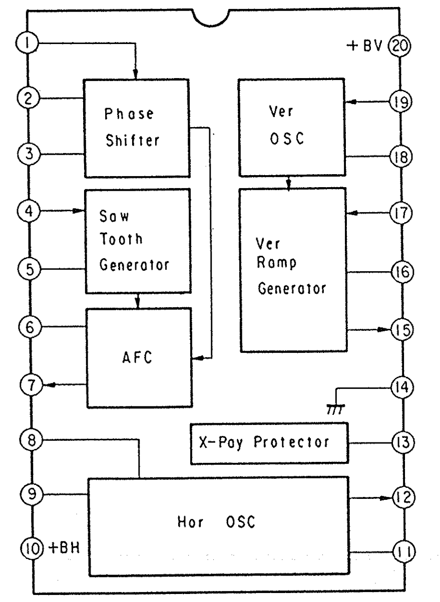
| | KP-46S4/46S4V/53S4/53S4U | KP-46S4K/53S4K |
|---|---|---|
| IC404 | CXP85460-037Q | CXP85460-047Q |
| IC405 | TPU3040-TC20 | TPU3041TC-22-TP |
| IC411 | BA10393F-E2 | LM393PS-E20 |
| IC415 | BA10358F-E2 | LM358DR-EZ |

## • B (3/4) BOARD WAVEFORMS

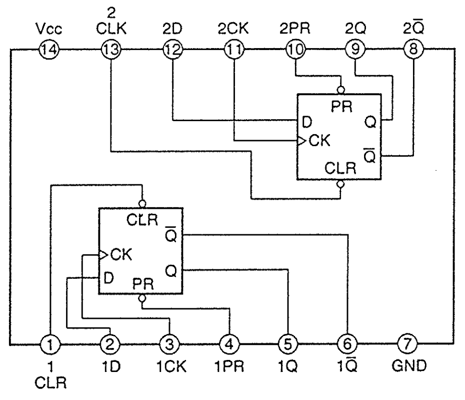



B(3/4)
(TWIN-PICTURE, FLICKER-FREE μCOM, OSD, TEXT, NICAM, CHROMA DECODER)
IC405 TEXT PROCESSOR
IC604 MAIN MICRO PROCESSOR
IC603 AUDIO PROCESSOR (NICAM/GERMAN DECODER)
IC408 RGB-MATRIX
IC601 CX20125 DYNAMIC PICTURE
IC401 NONVOLA MEMORY
IC402 PAGE RAM
TO CR BOARD CN7101
TO ZR BOARD CN8102
TO HA BOARD CN5001
TO HB BOARD CN3232
TO K BOARD CN3231
A
B
C
D
E
F
G
H
I
J
K
L
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

## B (4/4) BOARD : IC801 LA7856A


+BV
Phase Shifter
Ver OSC
Saw Tooth Generator
Ver Ramp Generator
AFC
X-Poy Protector
Hor OSC
+BH

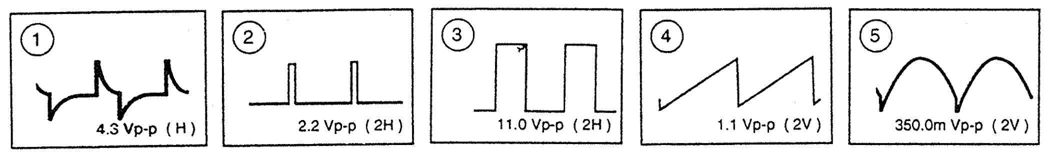
## B (4/4) BOARD : IC802 MC74HC74AF-T2


Vcc
CLK
2D
2CK
2PR
2Q
2Q̄
PR
D
CK
CLR
Q
Q̄
CLR
1D
1CK
1PR
1Q
1Q̄
GND

## B(4/4) BOARD ＊MARK LIST

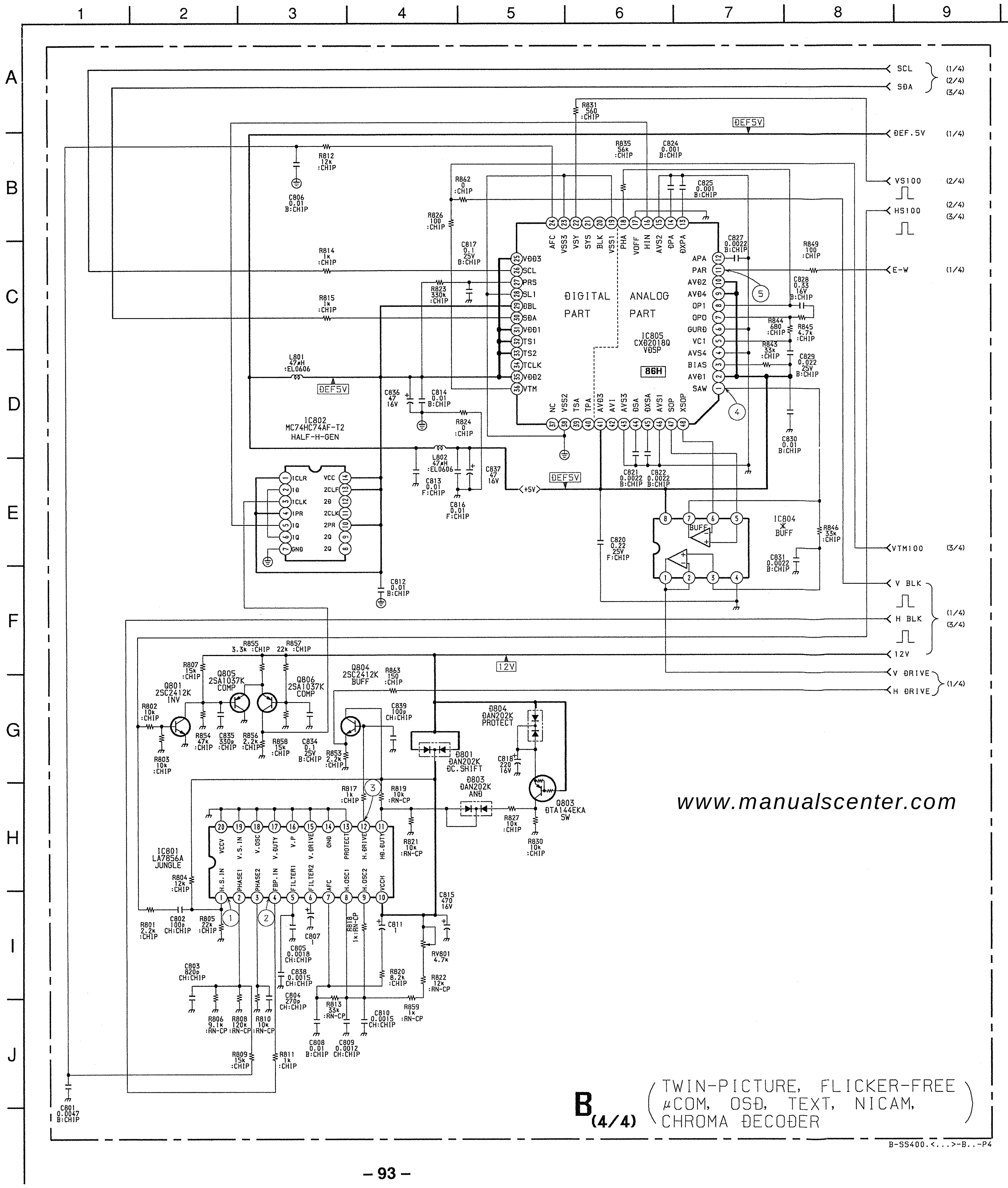
|  | KP-46S4/46S4V/53S4/53S4U | KP-46S4K/53S4K |
|---|---|---|
| IC804 | BA10358F-E2 | LM358DR-EZ |

## • B (4/4) BOARD WAVEFORMS



## B BOARD

| DIODE |  | ＊ | D803 | G-4 | ⑨ | IC413 | O-3 |  | Q35 | B-10 | ② | Q416 | K-2 | ① | Q458 | L-5 | ① |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 | C-10 | ⑨ | D804 | G-4 | ⑤ | IC414 | E-5 |  | Q36 | C-9 | ② | Q417 | G-1 | ② | Q459 | K-5 | ① |
| D2 | N-9 | ⑩ | IC |  |  | IC415 | E-2 |  | Q37 | C-9 | ② | Q418 | J-1 | ① | Q460 | D-4 | ② |
| D3 | N-9 | ⑩ | IC1 | M-9 |  | IC601 | L-4,D-4 |  | Q38 | E-9 | ② | Q419 | B-5 | ② | Q461 | A-4 | ② |
| D4 | D-9 | ⑨ | IC2 | M-9,C-9 |  | IC801 | I-5,G-5 |  | Q39 | D-9 | ② | Q420 | N-5 | ① | Q462 | E-5 | ② |
| D5 | K-10 | ④ | IC3 | C-10 |  | IC802 | F-5 |  | Q40 | L-9 | ① | Q421 | A-5 | ② | Q463 | O-4 | ① |
| D201 | O-7 | ④ | IC4 | D-10 |  | IC804 | F-5 |  | Q41 | M-9 | ① | Q422 | A-5 | ② | Q464 | D-5 | ② |
| D203 | C-6 | ⑤ | IC5 | E-10 |  | IC805 | F-4 |  | Q42 | F-9 | ② | Q423 | A-5 | ② | Q465 | E-5 | ② |
| D204 | N-6 | ④ | IC6 | N-8 |  | TRANSISTOR |  | ＊ | Q43 | L-9 | ① | Q424 | N-4 | ① | Q466 | D-5 | ② |
| D205 | M-7 | ④ | IC7 | F-10 |  | Q1 | N-9 | ① | Q201 | A-7 | ② | Q425 | O-4 | ① | Q467 | D-4 | ② |
| D206 | E-6 | ⑨ | IC8 | J-9,F-9 |  | Q2 | N-9 | ① | Q202 | O-8 | ① | Q426 | O-4 | ① | Q468 | A-4 | ② |
| D207 | L-6 | ④ | IC9 | B-8 |  | Q3 | D-10 | ② | Q204 | N-7 | ① | Q427 | N-5 | ① | Q469 | A-4 | ② |
| D208 | C-7 | ⑤ | IC10 | O-10 |  | Q4 | D-10 | ② | Q206 | O-8 | ① | Q428 | O-5 | ① | Q470 | A-4 | ② |
| D209 | C-7 | ⑤ | IC201 | D-6 |  | Q5 | D-9 | ② | Q207 | A-7 | ② | Q429 | I-2 | ① | Q471 | E-1 | ② |
| D210 | C-7 | ⑤ | IC202 | C-8 |  | Q6 | L-9 | ① | Q208 | D-6 | ② | Q430 | N-5 | ① | Q472 | M-1 | ① |
| D211 | D-6 | ⑤ | IC203 | N-6,B-6 |  | Q7 | N-9 | ① | Q209 | B-7 | ② | Q431 | N-5 | ① | Q473 | E-2 | ② |
| D213 | D-6 | ⑤ | IC204 | B-7 |  | Q8 | N-8 | ① | Q210 | N-6 | ① | Q432 | O-5 | ① | Q474 | E-2 | ② |
| D214 | F-6 | ⑨ | IC206 | D-8 |  | Q9 | D-9 | ② | Q211 | D-6 | ② | Q433 | E-4 | ② | Q475 | L-4 | ① |
| D402 | B-1 | ⑨ | IC207 | E-7 |  | Q10 | D-9 | ② | Q212 | D-6 | ② | Q434 | E-4 | ② | Q476 | E-1 | ② |
| D403 | N-2 | ⑧ | IC210 | B-6 |  | Q11 | D-10 | ② | Q213 | F-6 | ② | Q435 | M-5 | ① | Q477 | E-1 | ② |
| D404 | F-2 | ⑨ | IC212 | E-8 |  | Q12 | B-8 | ② | Q214 | C-7 | ② | Q436 | M-5 | ① | Q479 | G-3 | ② |
| D405 | N-4 | ④ | IC213 | E-6,K-6 |  | Q13 | N-9 | ① | Q215 | D-6 | ② | Q437 | L-5 | ① | Q601 | D-5 | ② |
| D406 | N-4 | ⑧ | IC214 | N-7,C-7 |  | Q14 | B-8 | ② | Q216 | F-6 | ② | Q438 | D-5 | ② | Q602 | D-5 | ② |
| D407 | O-5 | ⑧ | IC215 | M-7 |  | Q15 | N-10 | ① | Q217 | F-6 | ② | Q439 | M-5 | ① | Q603 | L-3 | ① |
| D408 | O-5 | ⑧ | IC216 | L-6 |  | Q16 | B-10 | ② | Q218 | J-6 | ① | Q440 | L-5 | ① | Q604 | D-5 | ② |
| D410 | B-5 | ⑨ | IC217 | M-7 |  | Q17 | K-5 | ① | Q219 | K-6 | ① | Q441 | M-5 | ① | Q605 | L-3 | ① |
| D411 | B-5 | ⑨ | IC218 | F-8 |  | Q18 | K-9 | ① | Q220 | K-6 | ① | Q442 | M-5 | ① | Q606 | D-5 | ② |
| D412 | B-5 | ⑨ | IC219 | L-6 |  | Q19 | K-9 | ① | Q401 | J-1 | ① | Q443 | M-5 | ① | Q607 | L-3 | ① |
| D414 | N-5 | ⑧ | IC221 | J-7,F-7 |  | Q20 | N-9 | ① | Q402 | J-1 | ① | Q444 | H-3 | ② | Q801 | G-5 | ② |
| D415 | M-5 | ⑧ | IC222 | L-6 |  | Q21 | N-10 | ① | Q403 | G-1 | ② | Q445 | G-3 | ② | Q803 | G-4 | ② |
| D416 | D-2 | ⑨ | IC401 | N-1 |  | Q22 | K-10 | ① | Q404 | I-1 | ① | Q446 | D-5 | ② | Q804 | G-4 | ② |
| D417 | O-6 | ⑧ | IC402 | B-1 |  | Q23 | B-8 | ② | Q405 | G-1 | ② | Q447 | L-5 | ① | Q805 | J-6 | ① |
| D418 | D-5 | ⑤ | IC403 | F-2 |  | Q24 | K-10 | ① | Q406 | G-2 | ② | Q448 | M-4 | ① | Q806 | J-6 | ① |
| D419 | L-5 | ④ | IC404 | C-2 |  | Q25 | B-8 | ② | Q407 | J-2 | ① | Q449 | F-4 | ② | VARIABLE RESISTOR |  |  |
| D420 | L-5 | ④ | IC405 | B-2 |  | Q26 | O-9 | ① | Q408 | J-2 | ① | Q450 | N-5 | ① |  |  |  |
| D421 | K-5 | ⑧ | IC406 | N-2 |  | Q27 | O-9 | ① | Q409 | N-2 | ① | Q451 | M-5 | ① | RV1 | K-9,E-9 |  |
| D422 | B-5 | ⑤ | IC407 | D-1 |  | Q28 | O-10 | ① | Q410 | O-2 | ① | Q452 | D-5 | ② | RV2 | K-9,E-9 |  |
| D424 | E-2 | ⑨ | IC408 | M-4,C-4 |  | Q29 | O-9 | ① | Q411 | N-2 | ① | Q453 | C-5 | ② | RV801 | J-4,G-4 |  |
| D425 | N-4 | ⑧ | IC409 | N-4,B-4 |  | Q30 | A-10 | ② | Q412 | B-2 | ② | Q454 | K-5 | ① |  |  |  |
| D426 | B-3 | ⑨ | IC410 | B-5 |  | Q31 | O-10 | ① | Q413 | K-3 | ① | Q455 | O-5 | ① |  |  |  |
| D427 | C-5 | ⑤ | IC411 | C-5 |  | Q32 | A-10 | ② | Q414 | J-2 | ① | Q456 | I-2 | ① |  |  |  |
| D801 | G-5 | ⑨ | IC412 | E-5 |  | Q34 | O-10 | ① | Q415 | J-2 | ① | Q457 | E-5 | ② |  |  |  |


SCL
SDA
BEF.5V
VS100
HS100
E-W
VTM100
V BLK
H BLK
12V
V DRIVE
H DRIVE
(1/4)
(2/4)
(3/4)
DEF5V
IC805 CXD2018Q VDSP
DIGITAL PART
ANALOG PART
IC802 MC74HC74AF-T2 HALF-H-GEN
IC804 BUFF
IC801 LA7856A JUNGLE
Q801 2SC2412K INV
Q805 2SA1037K COMP
Q806 2SA1037K COMP
Q804 2SC2412K BUFF
Q803 DTA144EKA SW
D801 DAN202K DC.SHIFT
D803 DAN202K AND
D804 DAN202K PROTECT

B(4/4) (TWIN-PICTURE, FLICKER-FREE μCOM, OSD, TEXT, NICAM, CHROMA DECODER)

B-55400.<...>-B..-P4

## B(4/4) BOARD IC VOLTAGE LIST

|  | Pin | Voltages |  | Pin | Voltages |
|---|---|---|---|---|---|
| IC801 | 1 | 7.3 |  | 4 | GND |
|  | 2 | 7.3 |  | 5 | 2.3 |
|  | 3 | 7.8 |  | 6 | GND |
|  | 4 | 0.4 |  | 7 | 2.3 |
|  | 5 | 3.7 |  | 8 | 2.6 |
|  | 6 | 2.9 |  | 9 | 5.0 |
|  | 7 | 6.4 |  | 10 | 5.0 |
|  | 8 | 5.9 |  | 11 | 2.3 |
|  | 9 | 5.5 |  | 12 | 2.3 |
|  | 10 | 11.3 |  | 13 | 1.7 |
|  | 11 | 5.7 |  | 14 | 1.4 |
|  | 12 | 4.5 |  | 15 | GND |
|  | 13 | GND |  | 16 | 2.5 |
|  | 14 | GND |  | 17 | GND |
|  | 15 | GND |  | 18 | 2.6 |
|  | 16 | GND |  | 19 | GND |
|  | 17 | GND |  | 20 | 0.6 |
|  | 18 | GND |  | 21 | – |
|  | 19 | GND |  | 22 | 0 |
|  | 20 | GND |  | 23 | 0 |
| IC802 | 1 | 5.0 |  | 24 | 0.9 |
|  | 2 | 2.5 |  | 25 | 5.0 |
|  | 3 | 3.4 |  | 26 | 4.4 |
|  | 4 | 5.0 |  | 27 | 4.8 |
|  | 5 | 2.5 |  | 28 | GND |
|  | 6 | 2.5 |  | 29 | 5.0 |
|  | 7 | GND |  | 30 | 4.3 |
|  | 8 | – |  | 31 | 5.0 |
|  | 9 | 0.6 |  | 32 | 5.0 |
|  | 10 | 5.0 |  | 33 | 5.0 |
|  | 11 | 0.4 |  | 34 | – |
|  | 12 | 0 |  | 35 | 5.0 |
|  | 13 | 5.0 |  | 36 | 2.8 |
|  | 14 | 5.0 |  | 37 | – |
| IC804 | 1 | 1.9 |  | 38 | GND |
|  | 2 | 1.9 |  | 39 | – |
|  | 3 | 1.9 |  | 40 | – |
|  | 4 | GND |  | 41 | 5.0 |
|  | 5 | 1.8 |  | 42 | – |
|  | 6 | 1.8 |  | 43 | GND |
|  | 7 | 1.8 |  | 44 | 1.5 |
|  | 8 | 5.0 |  | 45 | 1.5 |
| IC805 | 1 | 1.9 |  | 46 | GND |
|  | 2 | 5.0 |  | 47 | 1.8 |
|  | 3 | 1.7 |  | 48 | 1.8 |

All voltages are in V.
–: Blank Pin

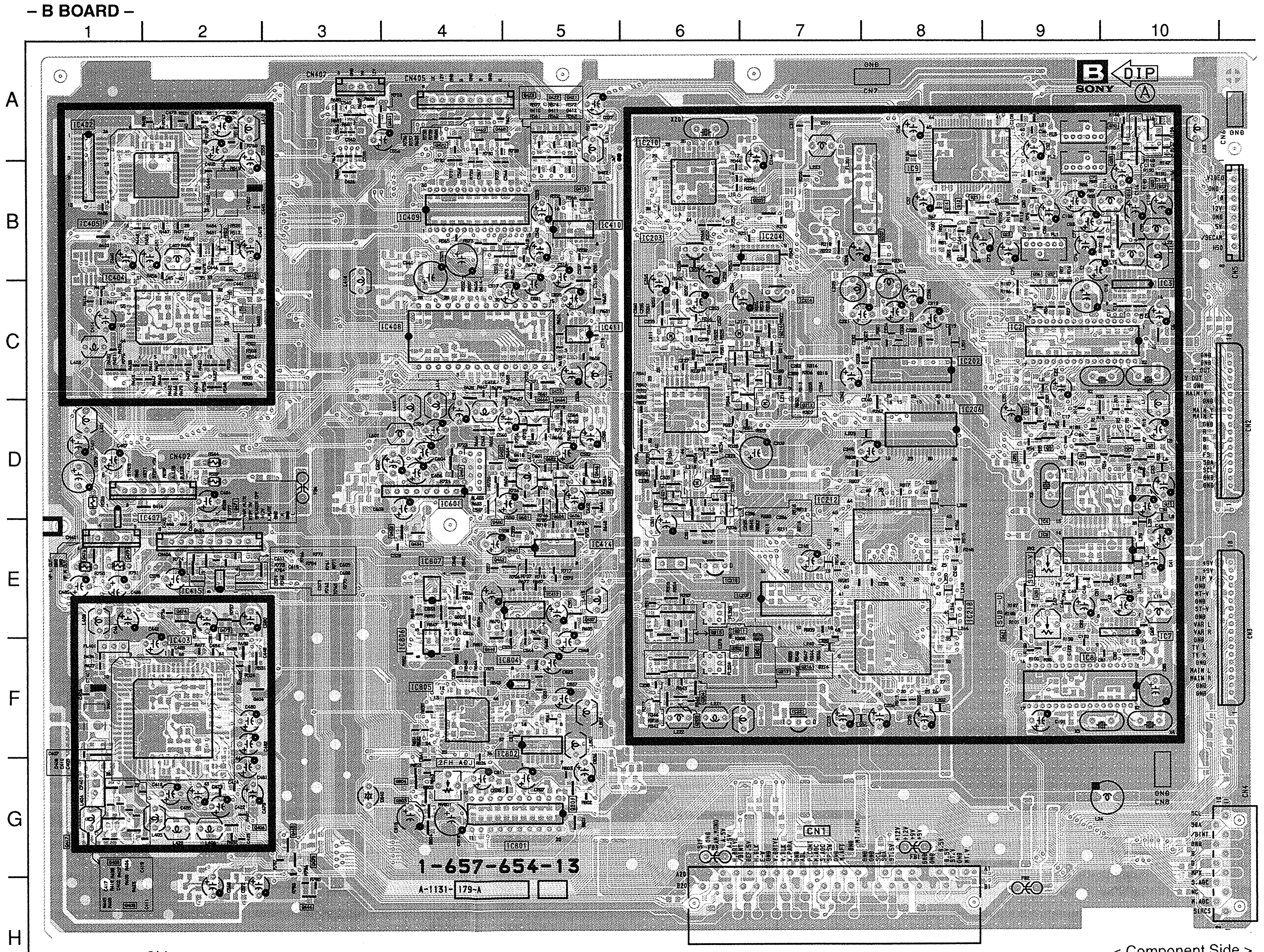
## B(4/4) BOARD TRANSISTOR VOLTAGE LIST

|  | B | C | E |
|---|---|---|---|
| Q801 | 0.1 | 6.9 | GND |
| Q803 | 12.0 | 0 | 11.9 |
| Q804 | 4.5 | 11.3 | 4.5 |
| Q805 | 6.9 | GND | 4.8 |
| Q806 | 4.9 | 3.4 | 4.8 |

All voltages are in V.

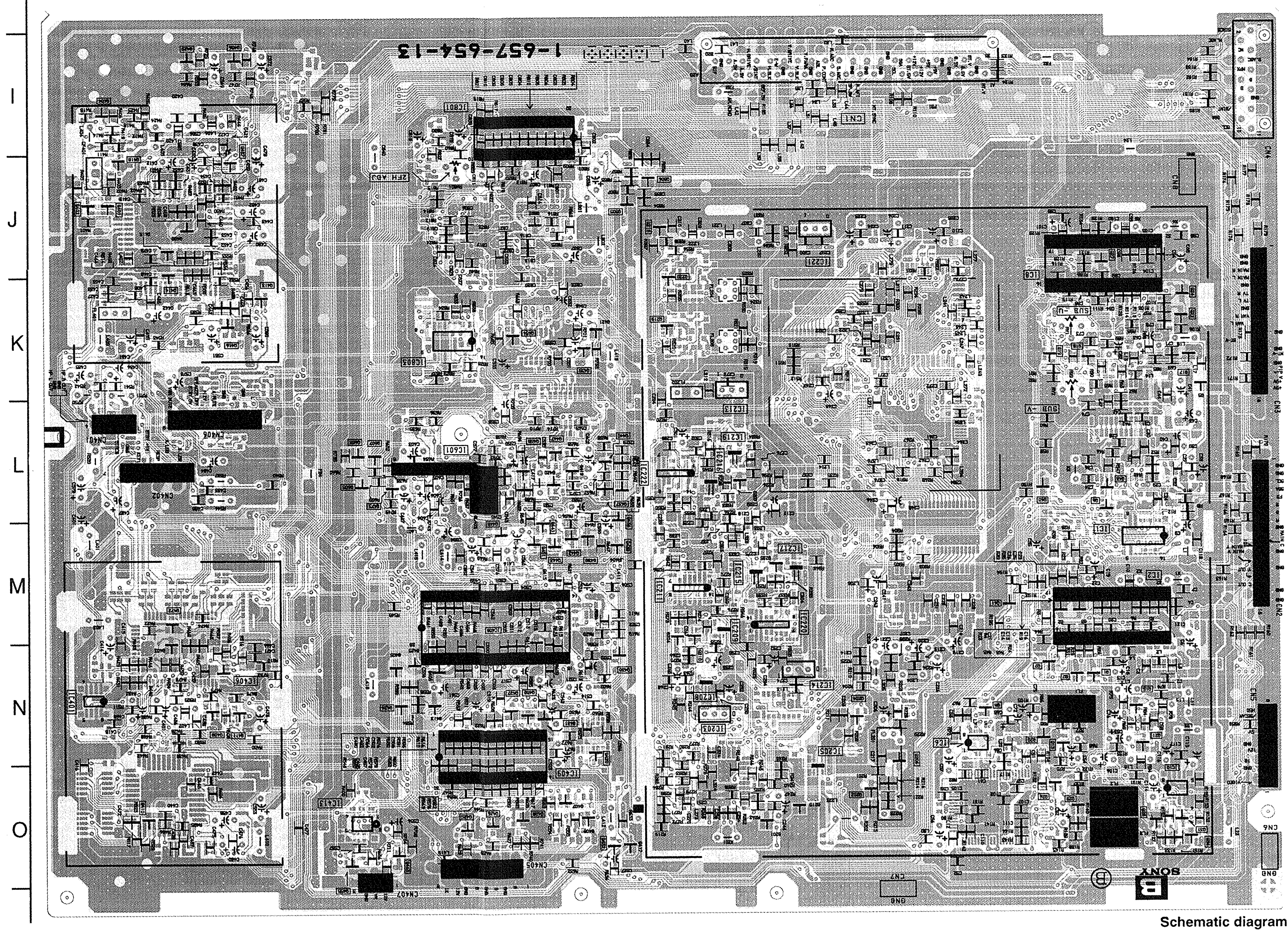
NOTE:
- ▨ : Pattern from the side which enables seeing.
- ▩ : Pattern of the rear side.

## – B BOARD –

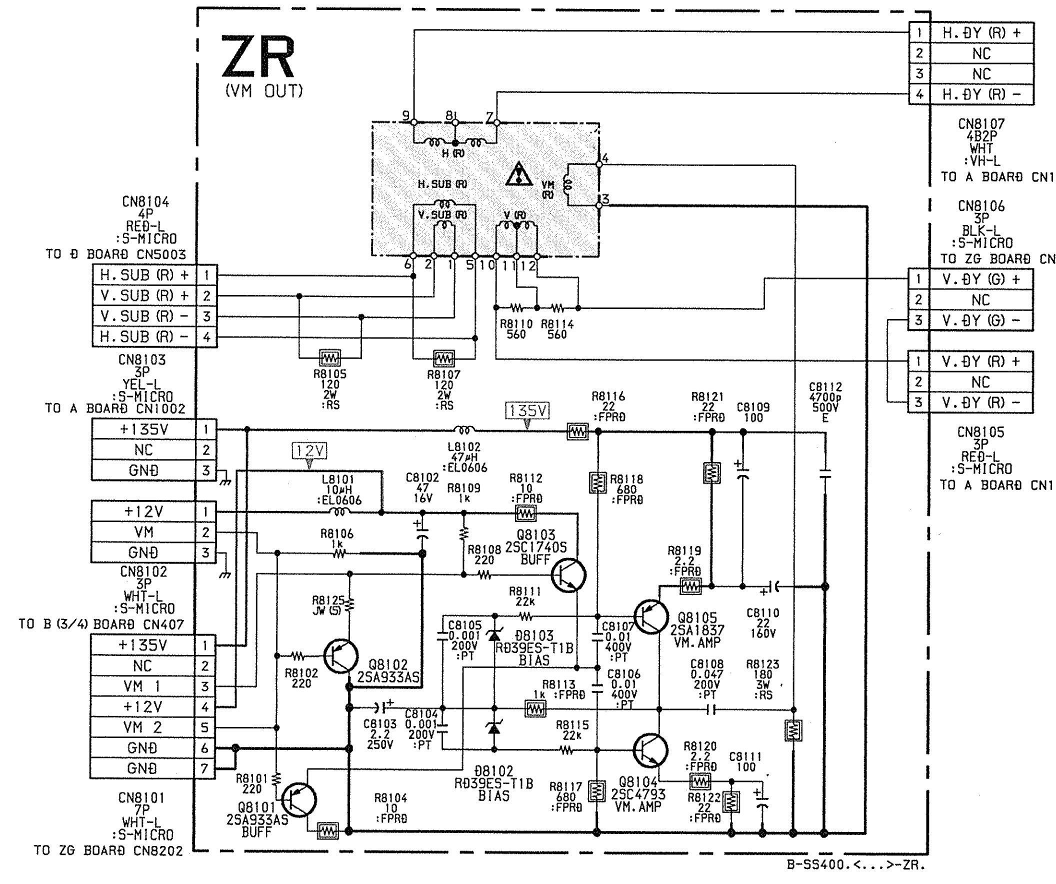

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
B DIP SONY Ⓐ
1-657-654-13
A-1131-179-A
CN1

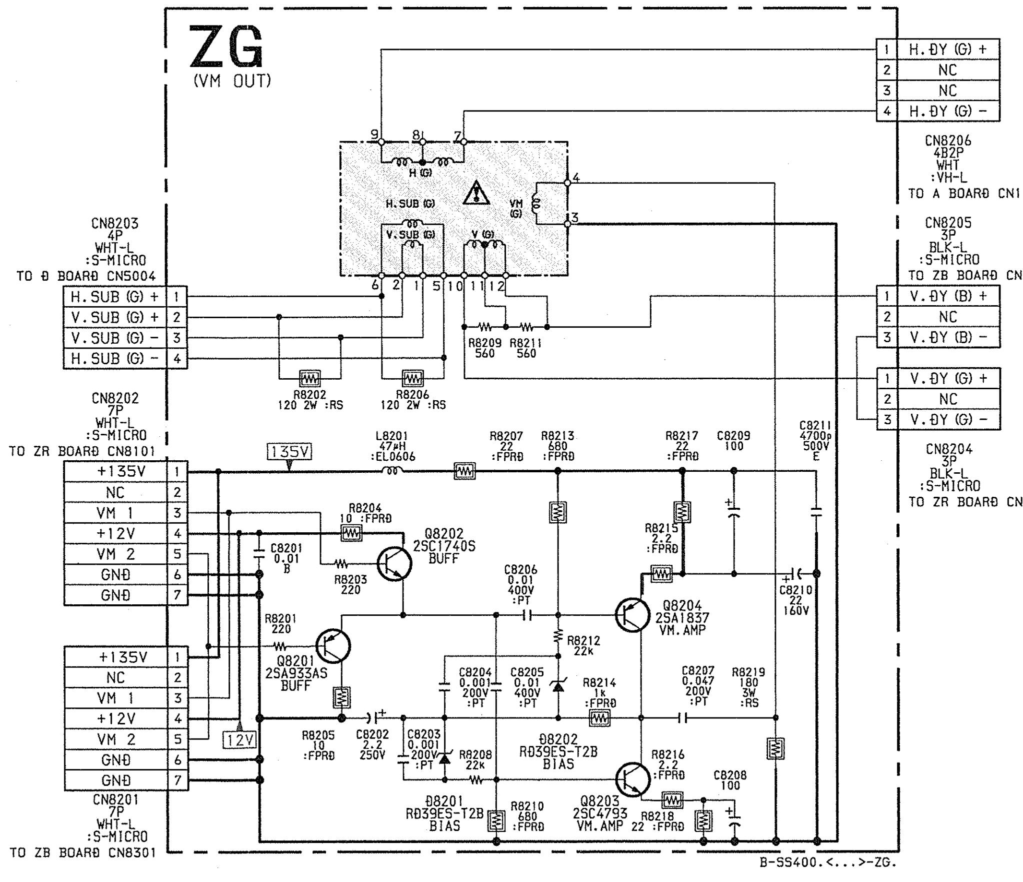
< Conductor Side >

< Component Side >


I
J
K
L
M
N
O
1-657-654-13
B SONY Ⓑ

Schematic diagrams
⇦ B (4/4) board ZR ZG ZB board ⇨


ZR
(VM OUT)
CN8104 4P RED-L :S-MICRO TO G BOARD CN5003
CN8103 3P YEL-L :S-MICRO TO A BOARD CN1002
CN8102 3P WHT-L :S-MICRO TO B (3/4) BOARD CN407
CN8101 7P WHT-L :S-MICRO TO ZG BOARD CN8202
CN8107 4P WHT :VH-L TO A BOARD CN1012
CN8106 3P BLK-L :S-MICRO TO ZG BOARD CN8204
CN8105 3P RED-L :S-MICRO TO A BOARD CN1009
Q8101 2SA933AS BUFF
Q8102 2SA933AS BUFF
Q8103 2SC1740S BUFF
Q8104 2SC4793 VM.AMP
Q8105 2SA1837 VM.AMP
D8101 RD39ES-T1B BIAS
D8102 RD39ES-T1B BIAS
B-SS400.<...>-ZR.


ZG
(VM OUT)
CN8203 4P WHT-L :S-MICRO TO G BOARD CN5004
CN8202 7P WHT-L :S-MICRO TO ZR BOARD CN8101
CN8201 7P WHT-L :S-MICRO TO ZB BOARD CN8301
CN8206 4P WHT :VH-L TO A BOARD CN1011
CN8205 3P BLK-L :S-MICRO TO ZB BOARD CN8303
CN8204 3P BLK-L :S-MICRO TO ZR BOARD CN8106
Q8201 2SA933AS BUFF
Q8202 2SC1740S BUFF
Q8203 2SC4793 VM.AMP
Q8204 2SA1837 VM.AMP
D8201 RD39ES-T2B BIAS
D8202 RD39ES-T2B BIAS
B-SS400.<...>-ZG.

## ZR BOARD TRANSISTOR VOLTAGE LIST

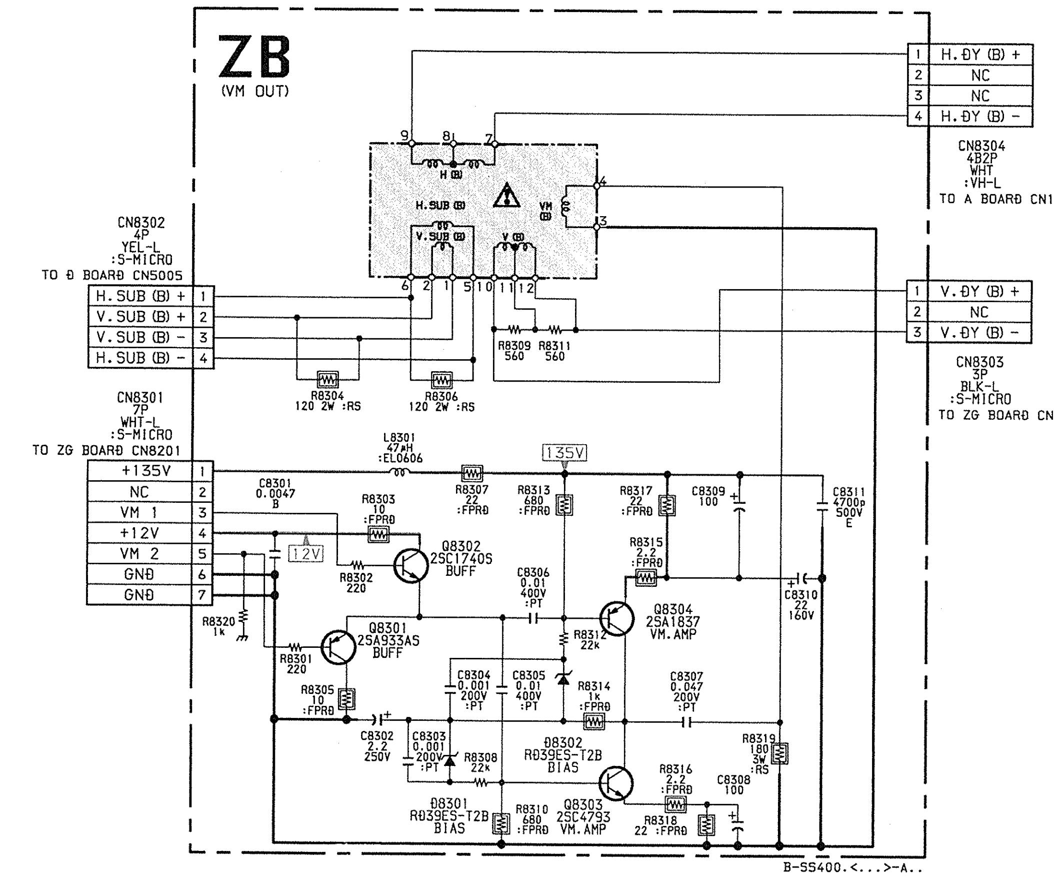
| | B | C | E |
|---|---|---|---|
| Q8101 | 4.0 | 0 | 4.4 |
| Q8102 | 4.4 | GND | 4.7 |
| Q8103 | 4.7 | 12.3 | 4.4 |
| Q8104 | 1.0 | 67.7 | 0.4 |
| Q8105 | 134.3 | 67.7 | 135.0 |

All voltages are in V.

## ZG BOARD TRANSISTOR VOLTAGE LIST

| | B | C | E |
|---|---|---|---|
| Q8201 | 4.0 | 0 | 4.4 |
| Q8202 | 4.7 | 12.3 | 4.4 |
| Q8203 | 1.0 | 67.7 | 0.4 |
| Q8204 | 134.3 | 67.7 | 134.9 |

All voltages are in V.


ZB
(VM OUT)
CN8302 4P YEL-L :S-MICRO TO G BOARD CN5005
CN8301 7P WHT-L :S-MICRO TO ZG BOARD CN8201
CN8304 4P WHT :VH-L TO A BOARD CN1010
CN8303 3P BLK-L :S-MICRO TO ZG BOARD CN8205
Q8301 2SA933AS BUFF
Q8302 2SC1740S BUFF
Q8303 2SC4793 VM.AMP
Q8304 2SA1837 VM.AMP
D8301 RD39ES-T2B BIAS
D8302 RD39ES-T2B BIAS
B-SS400.<...>-A..

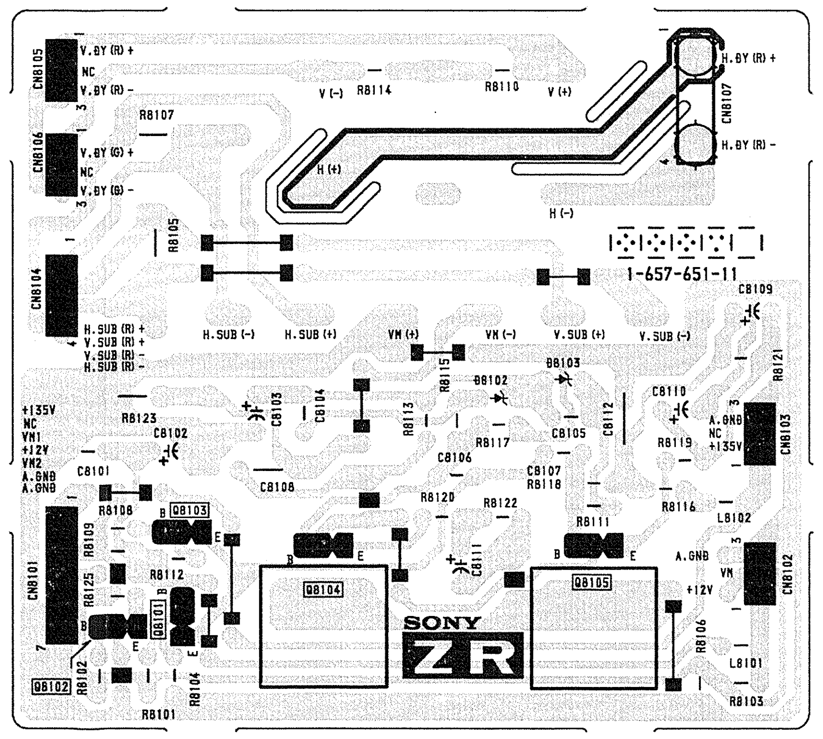
## ZB BOARD TRANSISTOR VOLTAGE LIST

| | B | C | E |
|---|---|---|---|
| Q8301 | 4.0 | 0 | 4.4 |
| Q8302 | 4.7 | 12.3 | 4.4 |
| Q8303 | 1.0 | 67.7 | 0.4 |
| Q8304 | 134.3 | 67.7 | 134.9 |

All voltages are in V.

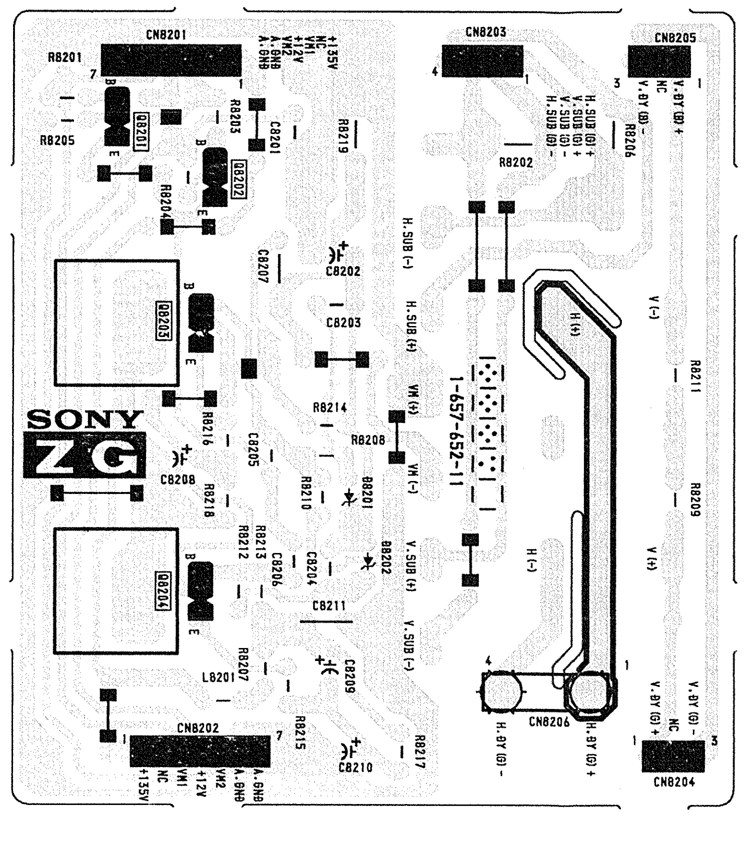
## ZR [VM OUT]

### – ZR BOARD –


1-657-651-11
SONY
ZR

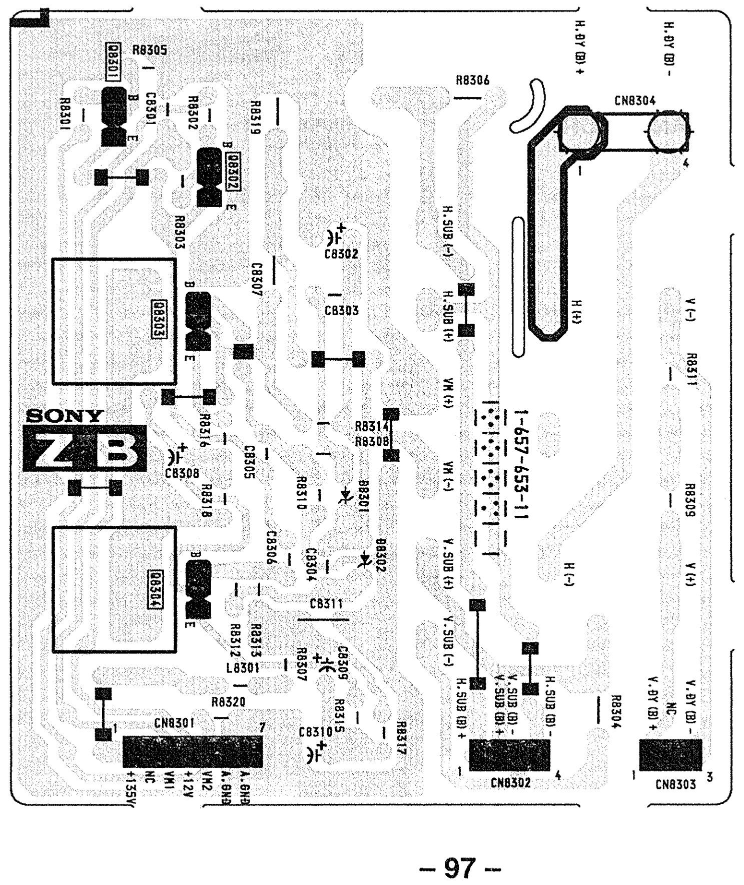
## ZG [VM OUT]

### – ZG BOARD –


1-657-652-11
SONY
ZG

## ZB [VM OUT]

### – ZB BOARD –


1-657-653-11
SONY
ZB

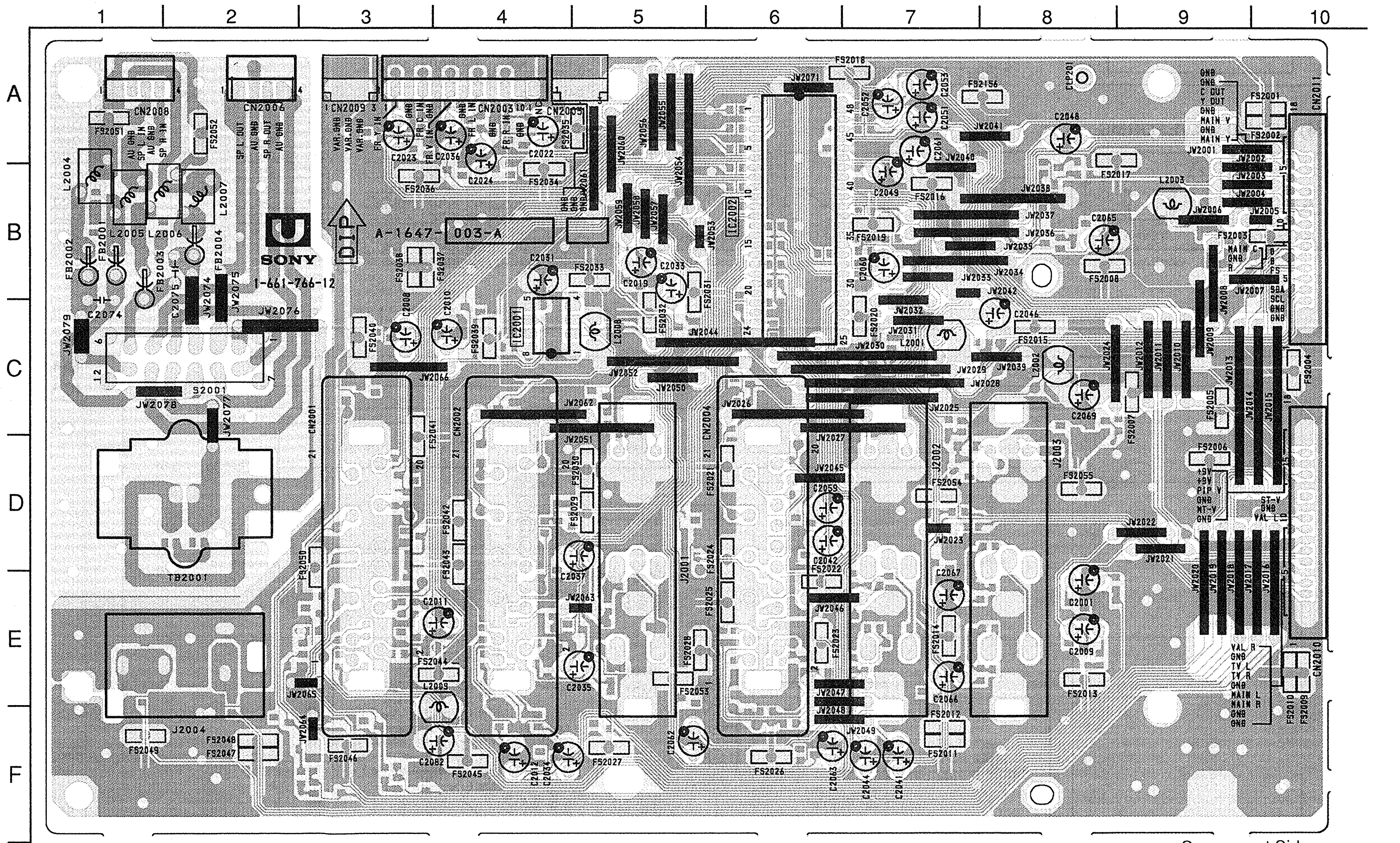
### U BOARD

| DIODE | | * |
|---|---|---|
| D2001 | H-8 | ④ |
| D2002 | I-3 | ④ |
| D2003 | I-3 | ④ |
| D2004 | H-2 | ④ |
| D2005 | H-3 | ④ |
| D2006 | J-3 | |
| D2007 | H-3 | ④ |
| D2008 | J-3 | ④ |
| D2009 | K-4 | ④ |
| D2010 | H-8 | ④ |
| D2011 | H-3 | ④ |
| D2012 | G-4 | ④ |
| D2013 | J-4 | ④ |
| D2015 | K-5 | ④ |
| D2016 | L-3 | ④ |
| D2017 | L-4 | ④ |
| D2018 | L-4 | ④ |
| D2019 | L-3 | ④ |
| D2020 | J-5 | ④ |
| D2021 | J-5 | ④ |
| D2022 | H-5 | ④ |
| D2023 | H-5 | ④ |
| D2024 | I-4 | ④ |
| D2025 | L-4 | ④ |
| D2026 | J-7 | ④ |
| D2027 | I-6 | ④ |
| D2028 | I-5 | ④ |
| D2029 | K-7 | ⑧ |
| D2030 | J-6 | ④ |
| D2031 | I-6 | ④ |
| D2032 | H-5 | ④ |
| D2033 | G-6 | ④ |
| D2034 | K-8 | ⑧ |
| D2035 | H-7 | ④ |
| D2036 | I-7 | ④ |
| D2037 | I-7 | ④ |
| D2038 | J-8 | ④ |
| D2039 | K-1 | ④ |
| D2040 | K-1 | ④ |
| D2041 | K-1 | ④ |
| D2042 | K-2 | ④ |
| D2043 | I-3 | ④ |
| D2044 | I-3 | ④ |
| **IC** | | |
| IC2001 | J-4,C-4 | |
| IC2002 | C-6,K-6 | |
| **TRANSISTOR** | | * |
| Q2001 | J-7 | ① |
| Q2002 | K-8 | ① |
| Q2003 | J-7 | ① |
| Q2004 | L-9 | ① |
| Q2005 | K-9 | ① |
| Q2006 | J-8 | ① |
| Q2007 | L-8 | ① |
| Q2008 | G-3 | ① |
| Q2009 | H-2 | ① |
| Q2010 | G-3 | ① |
| Q2011 | J-7 | ① |

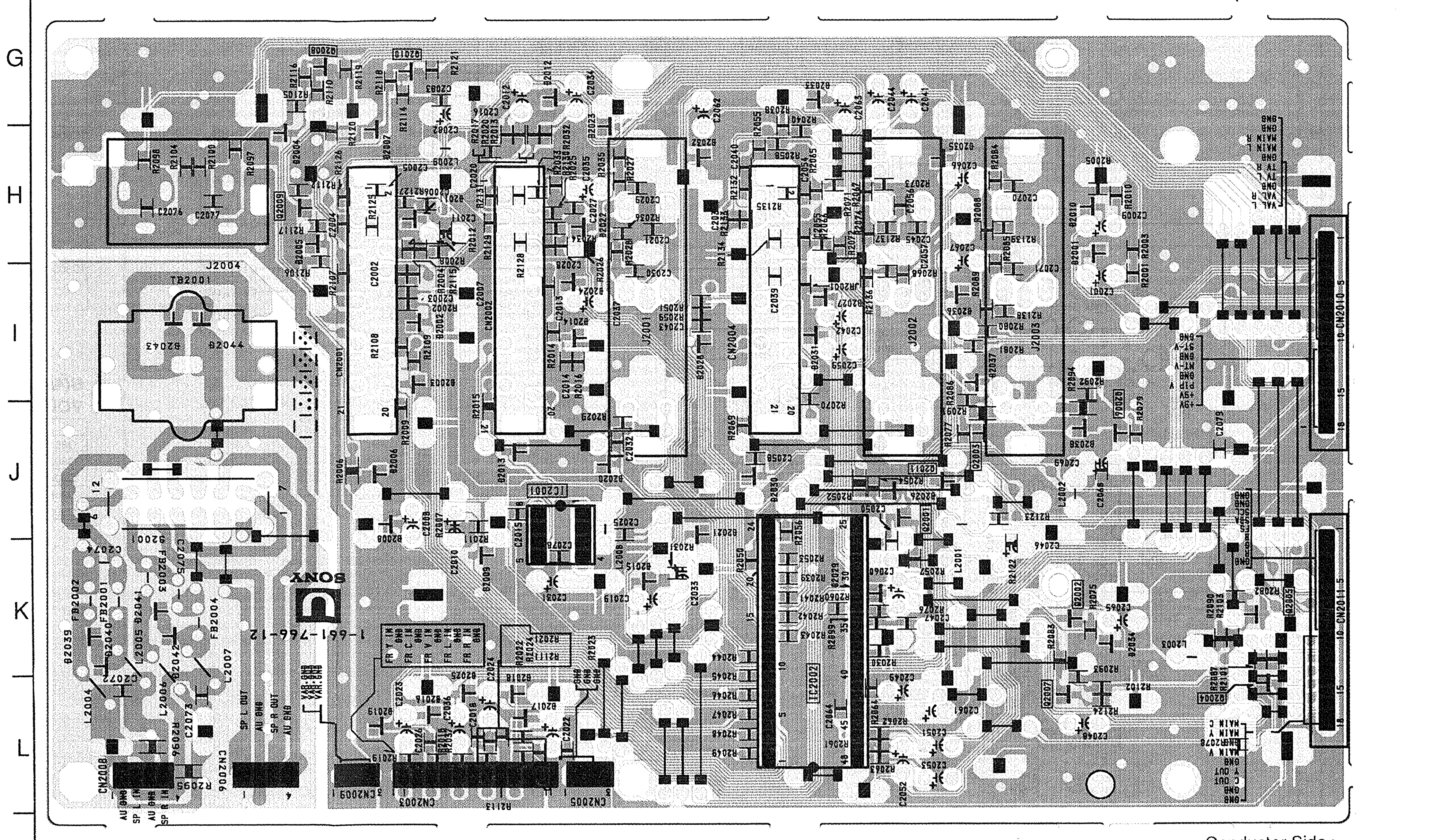
## U [A/V SWITCH, P IN P, AV-INPUT/OUTPUT, AUDIO LINE OUTPUT]

### – U BOARD –

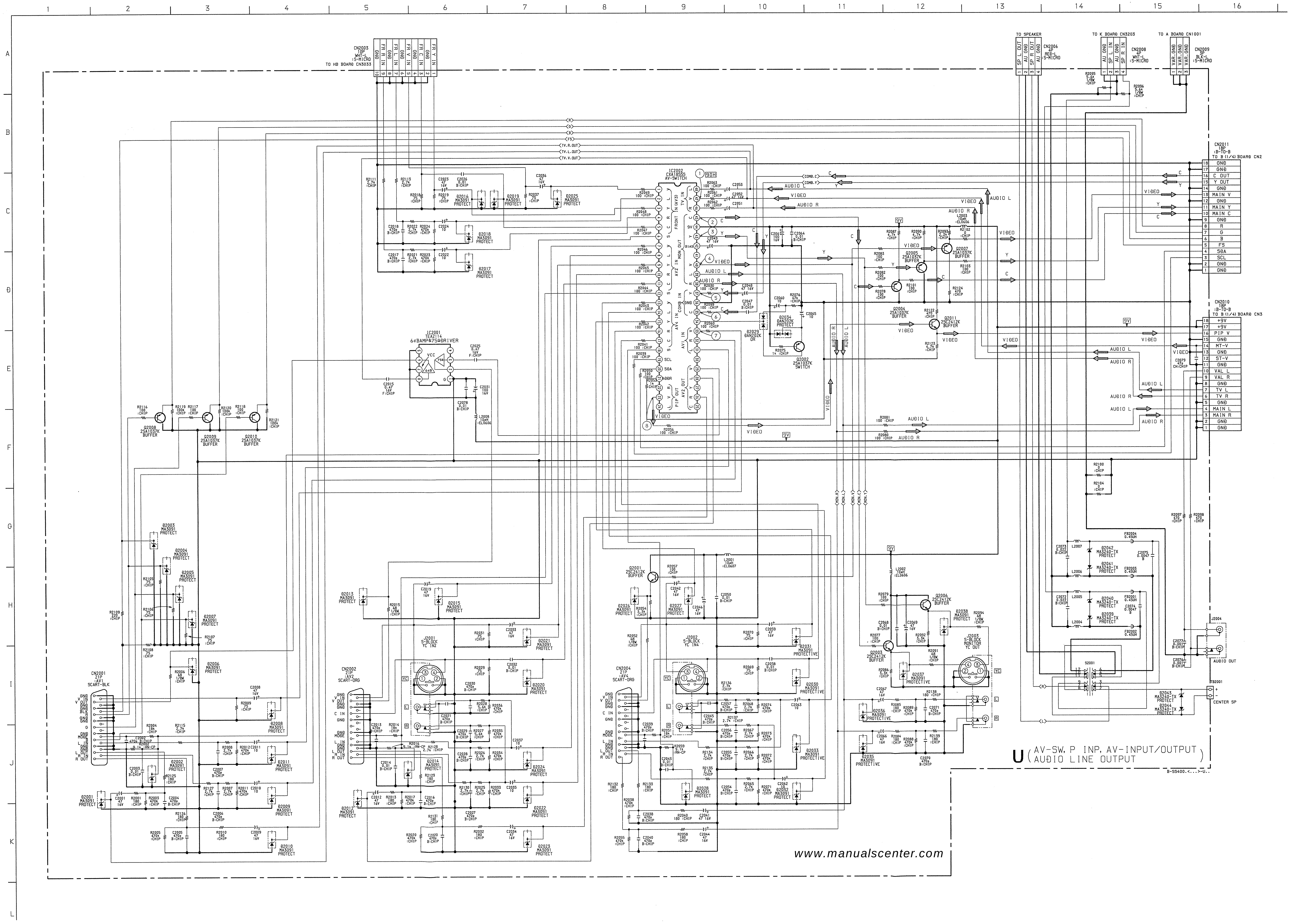
NOTE:
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.


A-1647-003-A
SONY
1-661-766-12

< Component Side >


SONY
1-661-766-12

< Conductor Side >


U (AV-SW, P INP, AV-INPUT/OUTPUT
AUDIO LINE OUTPUT)
B-SS400.<...>-U..
CN2003 10P WHT-L :S-MICRO TO HB BOARD CN3033
1 FR Y IN
2 GND
3 FR C IN
4 GND
5 FR V IN
6 GND
7 FR L IN
8 GND
9 FR R IN
10 GND
TO SPEAKER
CN2006 4P RED-L :S-MICRO
1 SP L OUT
2 AU GND
3 SP R OUT
4 AU GND
TO K BOARD CN3203
CN2008 4P WHT-L :S-MICRO
1 AU GND
2 SP L IN
3 AU GND
4 SP R IN
R2095 5.6k 1/8W :CHIP
R2096 5.6k 1/8W :CHIP
TO A BOARD CN1001
CN2009 3P BLK-L :S-MICRO
1 VAR.GND
2 VAR.GND
3 VAR.GND
CN2011 18P :B-TO-B TO B (1/4) BOARD CN2
18 GND
17 GND
16 C OUT
15 Y OUT
14 GND
13 MAIN V
12 GND
11 MAIN Y
10 MAIN C
9 GND
8 R
7 G
6 B
5 FS
4 SDA
3 SCL
2 GND
1 GND
CN2010 18P :B-TO-B TO B (1/4) BOARD CN3
18 +9V
17 +9V
16 PIP V
15 GND
14 MT-V
13 GND
12 ST-V
11 GND
10 VAL L
9 VAL R
8 GND
7 TV L
6 TV R
5 GND
4 MAIN L
3 MAIN R
2 GND
1 GND
C2079 47p CH:CHIP
IC2002 CXA1855S AV-SWITCH
IC2001 TEA2114 6dBAMP&75Ω DRIVER
Q2001 2SC2412K BUFFER
Q2002 2SA1037K SWITCH
Q2003 2SC2412K BUFFER
Q2004 2SA1037K BUFFER
Q2005 2SA1037K BUFFER
Q2006 2SC2412K BUFFER
Q2007 2SA1037K BUFFER
Q2008 2SA1037K BUFFER
Q2009 2SA1037K BUFFER
Q2010 2SA1037K BUFFER
Q2011 2SC2412K BUFFER
CN2001 21P AV1 SCART-BLK
CN2002 21P AV2 SCART-ORG
CN2004 21P AV4 SCART-ORG
J2001 S-BLOCK YC IN2
J2002 S-BLOCK YC IN4
J2003 S-BLOCK MONITOR YC OUT
J2004 AUDIO OUT
S2001
CN2005 CENTER SP
D2043 MA3240-TX PROTECT
D2044 MA3240-TX PROTECT
VIDEO
AUDIO L
AUDIO R
C
Y
9V

## U BOARD IC VOLTAGE LIST

| | Pin | Voltages |
|---|---|---|
| IC2001 | 1 | GND |
| | 2 | 2.0 |
| | 3 | 2.7 |
| | 5 | 8.8 |
| | 6 | 1.8 |
| | 7 | 8.8 |
| | 8 | 2.2 |
| IC2002 | 1 | 4.5 |
| | 2 | 4.5 |
| | 3 | 4.5 |
| | 4 | 4.5 |
| | 5 | 4.5 |
| | 6 | 0 |
| | 7 | 4.5 |
| | 8 | 4.5 |
| | 9 | 4.5 |
| | 10 | 4.5 |
| | 11 | 4.5 |
| | 12 | 0 |
| | 13 | 4.5 |
| | 14 | 4.5 |
| | 15 | 4.5 |
| | 16 | 4.5 |
| | 17 | 4.5 |
| | 18 | 0 |
| | 19 | 4.8 |
| | 20 | 4.8 |
| | 21 | 0 |
| | 22 | – |
| | 23 | 4.5 |
| | 24 | – |
| | 25 | – |
| | 26 | 4.5 |
| | 27 | – |
| | 28 | 4.5 |
| | 29 | 4.5 |
| | 30 | – |
| | 31 | 4.5 |
| | 32 | 4.5 |
| | 33 | 4.5 |
| | 34 | 0.5 |
| | 35 | 4.5 |
| | 36 | GND |
| | 37 | 4.5 |
| | 38 | 4.5 |
| | 39 | 4.5 |
| | 40 | 4.5 |
| | 41 | – |
| | 42 | 4.5 |
| | 43 | 4.5 |
| | 44 | 8.8 |
| | 45 | 8.8 |
| | 46 | 8.8 |
| | 47 | 8.8 |
| | 48 | 8.8 |

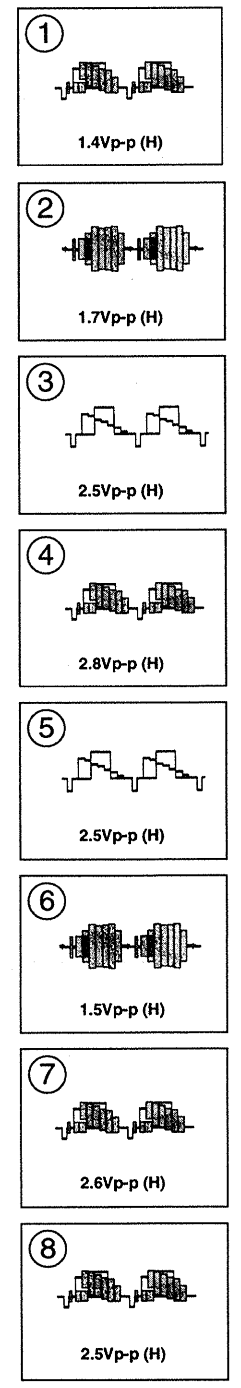
All voltages are in V.
–: Blank Pin

## U BOARD TRANSISTOR VOLTAGE LIST

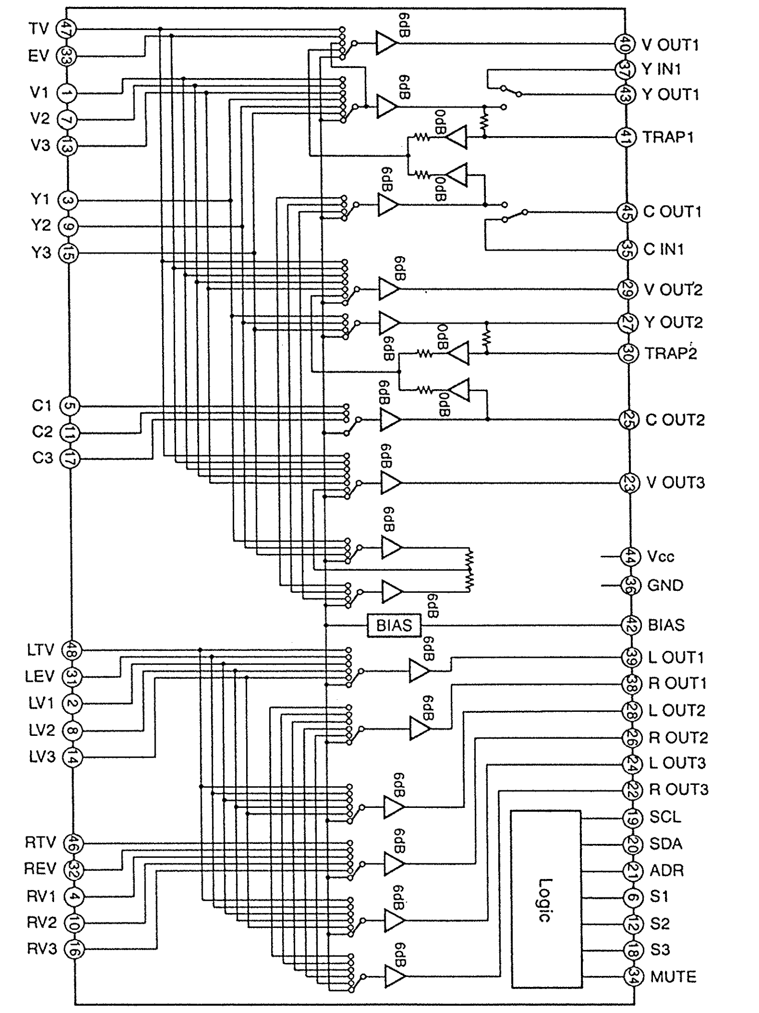
| | B | C | E |
|---|---|---|---|
| Q2001 | 4.4 | 8.8 | 3.8 |
| Q2002 | 8.8 | 1.2 | 8.6 |
| Q2003 | 4.5 | 8.8 | 3.9 |
| Q2004 | 4.5 | GND | 5.1 |
| Q2005 | 4.5 | GND | 5.1 |
| Q2006 | 4.4 | 8.8 | 3.8 |
| Q2007 | 4.4 | 0.8 | 5.0 |
| Q2008 | 0 | GND | 0 |
| Q2009 | 0 | GND | 0 |
| Q2010 | 0 | GND | 0 |
| Q2011 | 0 | 3.8 | 0 |

All voltages are in V.

## • U BOARD WAVEFORMS



## U BOARD : IC2002 CXA1855S


TV 47
EV 33
V1 1
V2 7
V3 13
Y1 3
Y2 9
Y3 15
C1 5
C2 11
C3 17
LTV 48
LEV 31
LV1 2
LV2 8
LV3 14
RTV 46
REV 32
RV1 4
RV2 10
RV3 16
40 V OUT1
37 Y IN1
43 Y OUT1
41 TRAP1
45 C OUT1
35 C IN1
29 V OUT2
27 Y OUT2
30 TRAP2
25 C OUT2
23 V OUT3
44 Vcc
36 GND
42 BIAS
39 L OUT1
38 R OUT1
28 L OUT2
26 R OUT2
24 L OUT3
22 R OUT3
19 SCL
20 SDA
21 ADR
6 S1
12 S2
18 S3
34 MUTE
6dB
0dB
BIAS
Logic

## D BOARD TRANSISTORE VOLTAGE LIST

| | B | C | E |
|---|---|---|---|
| Q5001 | 0 | 5.7 | GND |
| Q5002 | -3.2 | -5.0 | -2.6 |
| Q5003 | 2.5 | 5.1 | 1.9 |
| Q5004 | 0 | 5.0 | GND |
| Q5101 | 0 | 3.5 | GND |
| Q5102 | 0 | 3.3 | GND |
| Q5401 | 0 | 4.8 | GND |
| Q5411 | 0 | 5.7 | GND |

All voltages are in V.

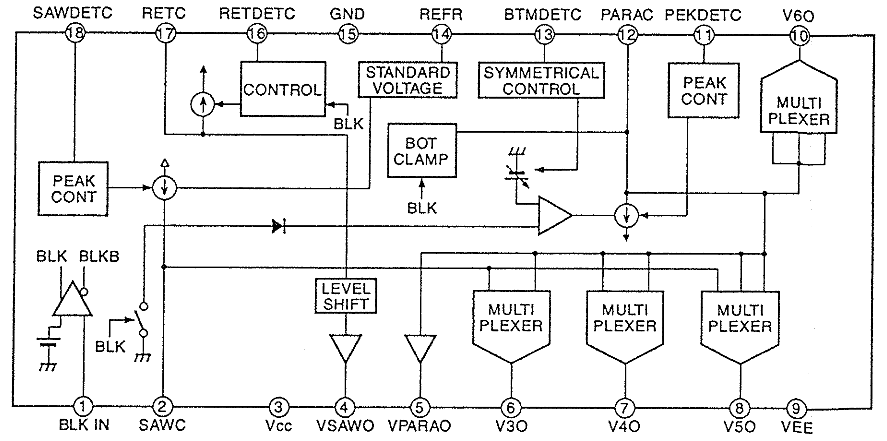
## D BOARD IC VOLTAGE LIST

| | Pin | Voltages | | Pin | Voltages | | Pin | Voltages | | Pin | Voltages | | Pin | Voltages |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IC5001 | 21 | 5.1 | | 32 | 0 | | 27 | 0 | | 25 | 0 | | 14 | 0.3 |
| | 24 | 5.0 | | 33 | 5.0 | | 28 | 0 | | 26 | 0 | | 15 | 1.8 |
| | 30 | 0 | | 34 | 5.0 | | 29 | 0 | | 27 | 0 | | 16 | 5.0 |
| | 31 | 0 | | 35 | 0 | | 30 | -0.6 | | 28 | 0 | IC5501 | 1 | 20.8 |
| | 32 | GND | | 36 | 0 | | 31 | 5.0 | | 29 | 0 | | 2 | 20.8 |
| | 34 | 2.5 | | 37 | 0 | | 32 | 0 | | 30 | -0.6 | | 3 | 20.8 |
| | 35 | 2.2 | | 38 | 0 | | 33 | 5.0 | | 31 | 5.0 | | 4 | 0 |
| | 36 | 5.1 | | 39 | 0 | | 34 | 5.0 | | 32 | 0 | | 5 | 0 |
| | 39 | GND | | 40 | 0 | | 35 | 0 | | 33 | 5.0 | | 6 | -0.2 |
| | 40 | GND | | 41 | 0 | | 36 | 0 | | 34 | 5.0 | | 7 | -0.2 |
| | 41 | GND | | 42 | GND | | 37 | 0 | | 35 | 0 | | 8 | GND |
| | 42 | GND | IC5003 | 1 | 5.1 | | 38 | 0 | | 36 | 0 | | 9 | -0.2 |
| | 43 | 5.1 | | 2 | 5.1 | | 39 | 0 | | 37 | 0 | | 10 | -0.2 |
| | 44 | 4.7 | | 3 | GND | | 40 | 0 | | 38 | 0 | | 11 | 22.2 |
| | 46 | 0 | IC5004 | 1 | 0.8 | | 41 | 0 | | 39 | 0 | | 12 | -21.8 |
| | 47 | 0 | | 2 | 1.1 | | 42 | GND | | 40 | 0 | | 13 | -21.8 |
| | 48 | 0 | | 3 | 5.1 | IC5006 | 1 | 0.8 | | 41 | 0 | | 14 | 22.2 |
| | 54 | 4.5 | | 4 | 0 | | 2 | 1.1 | | 42 | GND | | 15 | 22.4 |
| | 56 | 4.6 | | 5 | -1.0 | | 3 | 5.1 | IC5008 | 1 | 0.5 | | 16 | 21.9 |
| | 58 | 0 | | 6 | 0 | | 4 | 0 | | 2 | 0 | | 17 | 21.9 |
| | 59 | 0 | | 7 | -0.8 | | 5 | -1.0 | | 3 | GND | | 18 | 22.4 |
| | 60 | 0 | | 9 | -5.0 | | 6 | 0 | | 4 | 5.1 | | 19 | -21.9 |
| | 61 | GND | | 10 | 0.1 | | 7 | -0.8 | | 5 | 0 | | 20 | -0.5 |
| | 62 | GND | | 11 | 0.4 | | 9 | -5.0 | | 6 | 0 | | 21 | -0.3 |
| | 63 | 5.1 | | 12 | -1.0 | | 10 | 0.1 | | 7 | 0 | | 22 | 0 |
| | 64 | 5.1 | | 13 | 0.3 | | 11 | 0.4 | | 8 | 0 | IC5502 | 1 | 20.8 |
| IC5002 | 1 | 0 | | 14 | 1.2 | | 12 | -1.0 | | 9 | 0 | | 2 | 20.8 |
| | 2 | -1.0 | | 15 | GND | | 13 | 0.3 | | 10 | 0 | | 3 | 20.8 |
| | 3 | 0 | | 16 | -1.2 | | 14 | 1.2 | | 11 | -5.0 | | 4 | 0 |
| | 4 | -0.8 | | 17 | 1.9 | | 15 | GND | | 12 | GND | | 5 | 0 |
| | 5 | 0 | | 18 | -1.2 | | 16 | -1.2 | | 13 | 0 | | 6 | -0.2 |
| | 6 | -0.4 | IC5005 | 1 | 0 | | 17 | 1.9 | | 14 | 0 | | 7 | -0.2 |
| | 7 | 0 | | 2 | -1.0 | | 18 | -1.2 | IC5009 | 1 | 0.3 | | 8 | GND |
| | 8 | 5.0 | | 3 | 0 | IC5007 | 1 | 0 | | 2 | 0 | | 9 | -0.2 |
| | 9 | -5.0 | | 4 | -0.8 | | 2 | -1.0 | | 3 | GND | | 10 | -0.2 |
| | 10 | 5.0 | | 5 | 0 | | 3 | 0 | | 4 | 5.0 | | 11 | 22.2 |
| | 11 | 5.0 | | 6 | -0.4 | | 4 | -0.8 | | 5 | GND | | 12 | -21.8 |
| | 12 | 0 | | 7 | 5.0 | | 5 | 0 | | 6 | 0 | | 13 | -21.8 |
| | 13 | 5.0 | | 8 | 5.0 | | 6 | -0.4 | | 7 | 0 | | 14 | 22.2 |
| | 14 | -2.2 | | 9 | -5.0 | | 7 | -5.0 | | 8 | 0 | | 15 | 22.4 |
| | 15 | 0 | | 10 | 5.0 | | 8 | 5.0 | | 9 | 0 | | 16 | 21.9 |
| | 16 | -0.9 | | 11 | 5.0 | | 9 | -5.0 | | 10 | 0 | | 17 | 21.9 |
| | 17 | 0 | | 12 | 0 | | 10 | 5.0 | | 11 | -5.0 | | 18 | 22.4 |
| | 18 | -1.1 | | 13 | 5.0 | | 11 | 5.0 | | 12 | 0 | | 19 | -21.9 |
| | 19 | 0 | | 14 | -2.2 | | 12 | 0 | | 13 | 0 | | 20 | -0.5 |
| | 20 | -0.4 | | 15 | 0 | | 13 | 5.0 | | 14 | 0 | | 21 | -0.3 |
| | 21 | 5.0 | | 16 | -0.9 | | 14 | -2.2 | IC5101 | 1 | GND | | 22 | 0 |
| | 22 | 0.3 | | 17 | 0 | | 15 | 0 | | 2 | 0 | IC5601 | I | 10.6 |
| | 23 | 0 | | 18 | -1.1 | | 16 | -0.9 | | 3 | 5.0 | | G | GND |
| | 24 | 0 | | 19 | 0 | | 17 | 0 | | 4 | 3.4 | | O | 5.1 |
| | 25 | 0 | | 20 | -0.4 | | 18 | -1.1 | | 6 | 2.5 | IC5602 | I | 11.1 |
| | 26 | 0 | | 21 | 5.0 | | 19 | 0 | | 7 | 1.4 | | G | GND |
| | 27 | 0 | | 22 | 0 | | 20 | -0.4 | | 8 | GND | | O | -5.0 |
| | 28 | 0 | | 23 | 0 | | 21 | 5.0 | | 9 | GND | | | |
| | 29 | 0 | | 24 | 0 | | 22 | 0 | | 10 | 3.4 | | | |
| | 30 | -0.6 | | 25 | 0 | | 23 | 0 | | 11 | 5.1 | | | |
| | 31 | 5.0 | | 26 | 0 | | 24 | 0 | | 12 | 0.8 | | | |

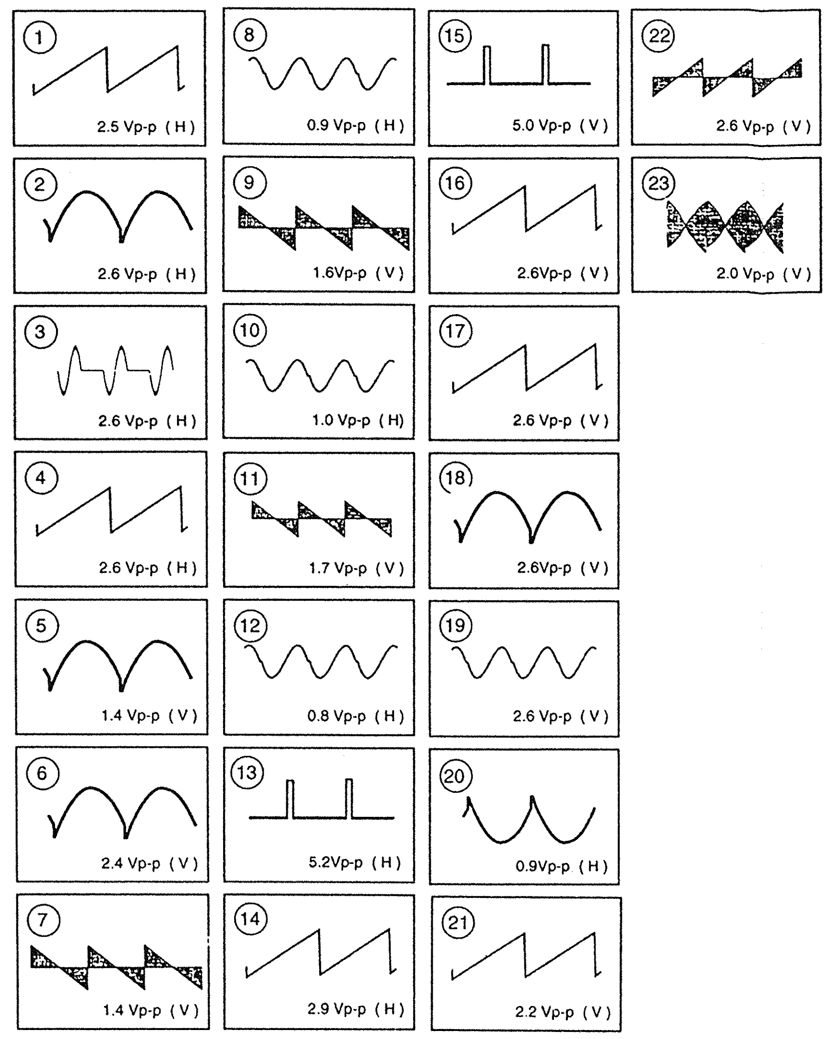
All voltages are in V.

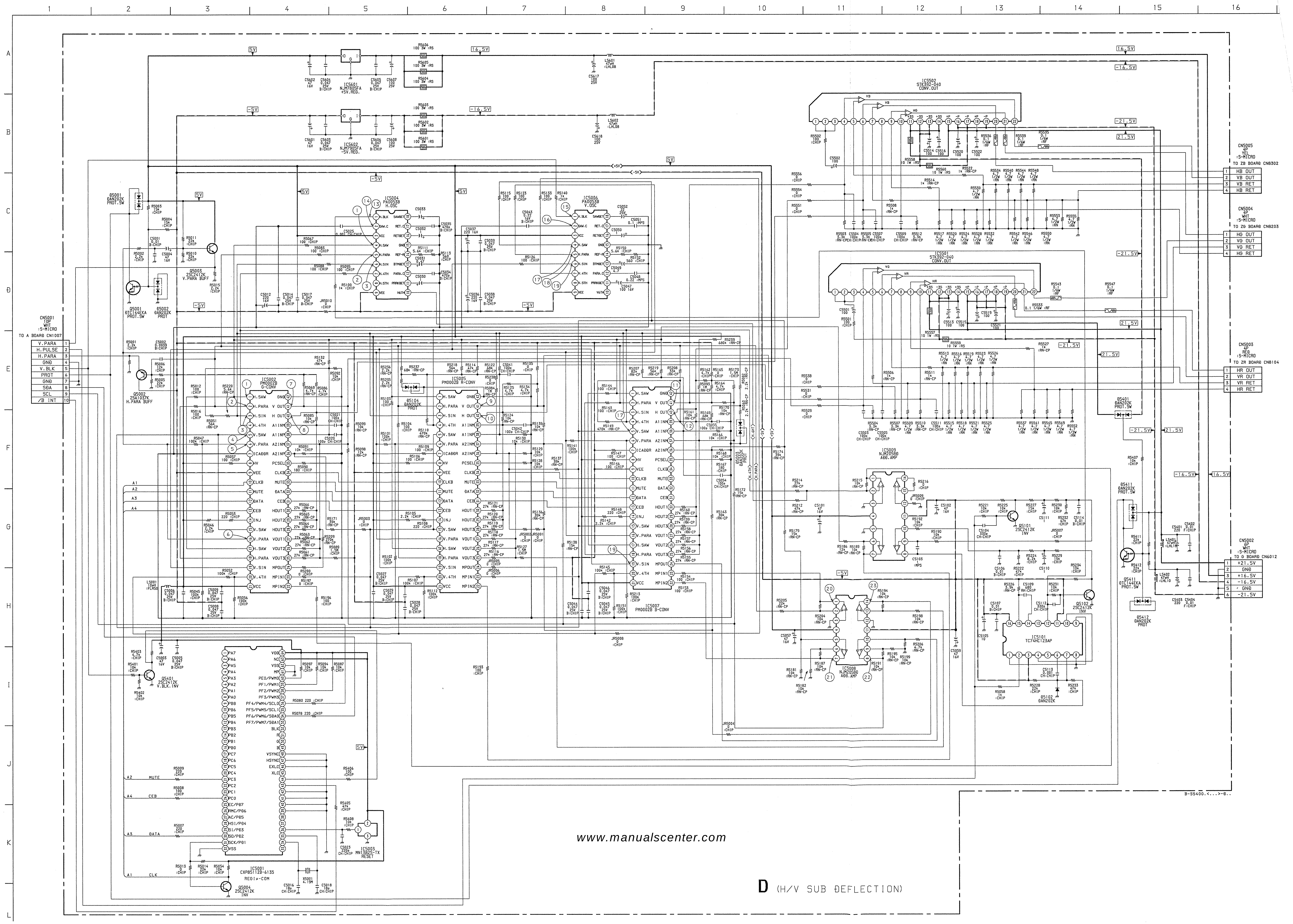
Pin numbers which are not described are not used.

## D BOARD : IC5004, 5006 PA0053B


SAWDETC ⑱
RETC ⑰
RETDETC ⑯
GND ⑮
REFR ⑭
BTMDETC ⑬
PARAC ⑫
PEKDETC ⑪
V6O ⑩
CONTROL
STANDARD VOLTAGE
SYMMETRICAL CONTROL
PEAK CONT
MULTI PLEXER
PEAK CONT
BOT CLAMP
BLK
BLK BLKB
LEVEL SHIFT
MULTI PLEXER
MULTI PLEXER
MULTI PLEXER
① BLK IN
② SAWC
③ Vcc
④ VSAWO
⑤ VPARAO
⑥ V3O
⑦ V4O
⑧ V5O
⑨ VEE

## • D BOARD WAVEFORMS

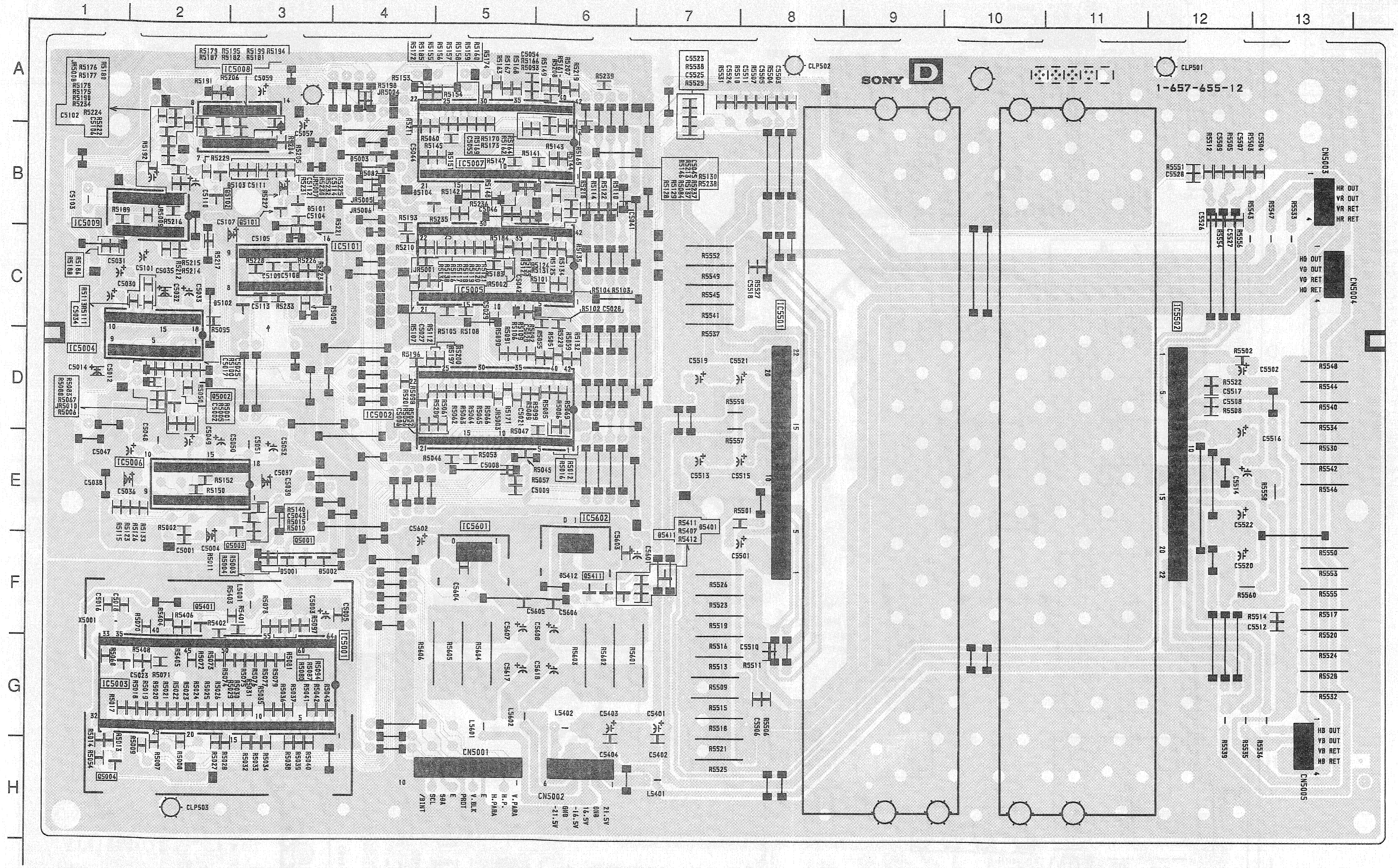



D (H/V SUB DEFLECTION)
CN5001 10P WHT :S-MICRO TO A BOARD CN1007
V.PARA
H.PULSE
H.PARA
GND
V.BLK
PROT
GND
SDA
SCL
/B INT
CN5005 4P YEL :S-MICRO TO ZB BOARD CN8302
HB OUT
VB OUT
VB RET
HB RET
CN5004 4P WHT :S-MICRO TO ZG BOARD CN8203
HG OUT
VG OUT
VG RET
HG RET
CN5003 4P RED :S-MICRO TO ZR BOARD CN8104
HR OUT
VR OUT
VR RET
HR RET
CN5002 6P WHT :S-MICRO TO G BOARD CN6012
+21.5V
GND
+16.5V
-16.5V
GND
-21.5V
IC5601 NJM7805FA +5V.REG.
IC5602 NJM7905FA -5V.REG.
IC5502 STK392-040 CONV.OUT
IC5501 STK392-040 CONV.OUT
IC5004 PA0053B H.OSC
IC5006 PA0053B V.OSC
IC5002 PM0002B G-CONV
IC5005 PM0002B R-CONV
IC5007 PM0002B B-CONV
IC5001 CXP85112B-613S REG(a-COM
IC5003 MN1382S-TX RESET
IC5008 NJM2058D ADD.AMP
IC5009 NJM2058D ADD.AMP
IC5101 TC74HC123AP
Q5001 DTC144EKA PROT.SW
Q5002 2SA1037K H.PARA BUFF
Q5003 2SC2412K V.PARA BUFF
Q5004 2SC2412K INV
Q5401 2SC2412K V.BLK.INV
Q5411 DTC144EKA PROT.SW
Q5101 2SC2412K INV
Q5102 2SC2412K INV
D5001 DAN202K PROT
D5401 DAN202K PROT.SW
D5411 DAN202K PROT.SW
D5412 DAN202K PROT
D5102 DAN202K
8-SS400.<...>-0..

Schematic diagrams
← U board D board →

# D [H/V SUB DEFLECTION]

## – D BOARD –



1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
SONY
D
1-657-655-12
CLP502
CLP501
CLP503
IC5001
IC5002
IC5003
IC5004
IC5005
IC5006
IC5007
IC5008
IC5009
IC5101
IC5501
IC5502
IC5601
IC5602
CN5001
CN5002
CN5003
CN5004
CN5005
HR OUT
VR OUT
VR RET
HR RET
HB OUT
VB OUT
VB RET
HB RET
V.PARA
H.P.
H.PARA
V.BLK
PROT
E
SDA
SCL
/BINT
21.5V
GND
16.5V
-16.5V
GND
-21.5V

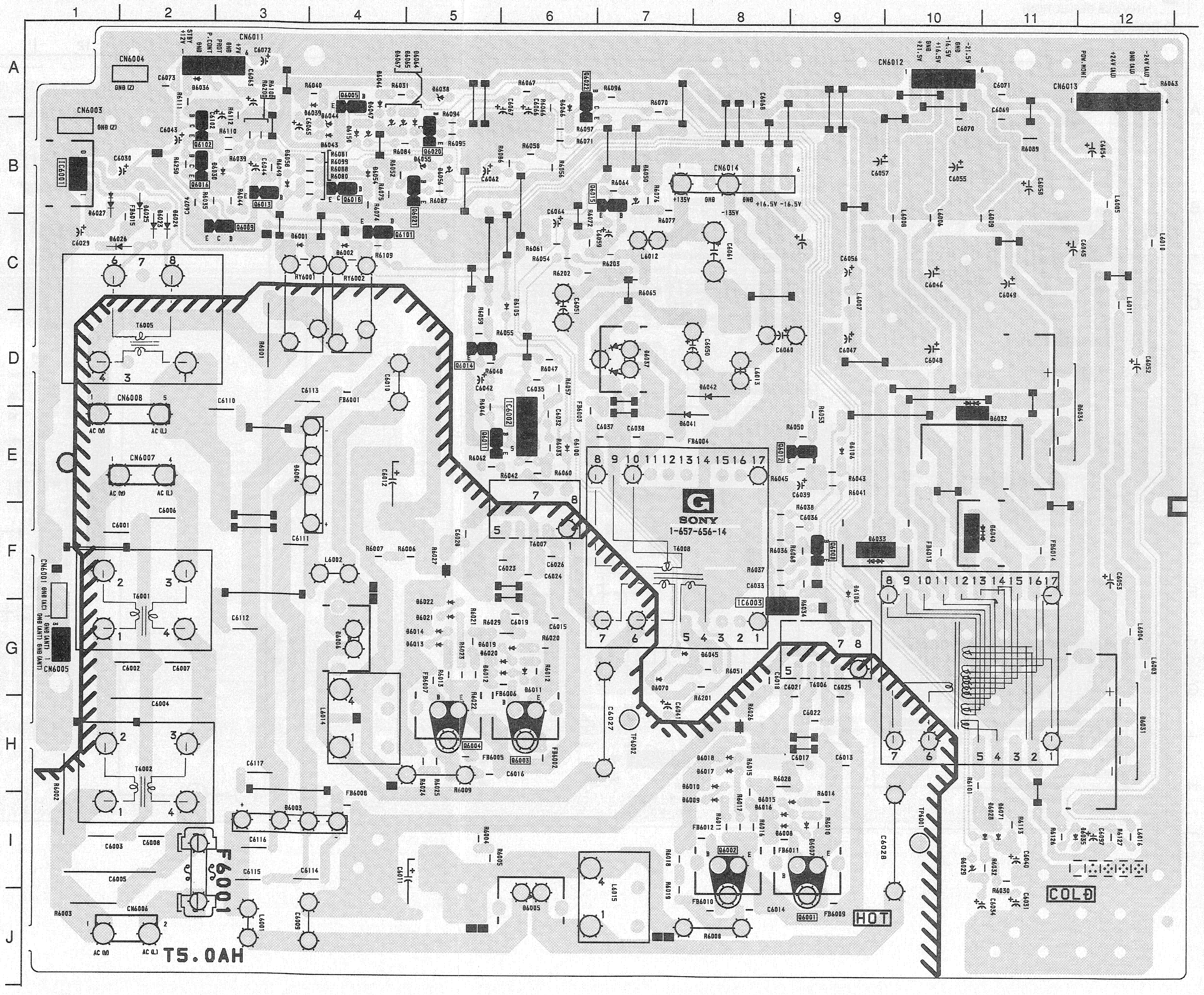
## D BOARD

| DIODE | | * |
|---|---|---|
| D5001 | F-3 | ⑧ |
| D5002 | F-3 | ⑧ |
| D5003 | B-4 | ⑧ |
| D5102 | C-3 | ⑧ |
| D5104 | B-4 | ⑧ |
| D5401 | F-7 | ⑧ |
| D5411 | F-6 | ⑧ |
| D5412 | F-6 | ⑧ |
| **IC** | | |
| IC5001 | F-3 | |
| IC5002 | D-5 | |
| IC5003 | G-2 | |
| IC5004 | D-2 | |
| IC5005 | C-5 | |
| IC5006 | E-2 | |
| IC5007 | B-5 | |
| IC5008 | B-3 | |
| IC5009 | B-2 | |
| IC5101 | C-3 | |
| IC5501 | E-8 | |
| IC5502 | E-12 | |
| IC5601 | F-5 | |
| IC5602 | F-6 | |
| **TRANSISTOR** | | * |
| Q5001 | F-3 | ① |
| Q5002 | D-2 | ① |
| Q5003 | E-3 | ① |
| Q5004 | H-1 | ① |
| Q5101 | B-3 | ① |
| Q5102 | B-2 | ① |
| Q5401 | F-2 | ① |
| Q5411 | F-6 | ① |

## G BOARD

| DIODE | | * | D6044 | B-4 | – |
|---|---|---|---|---|---|
| D6001 | C-3 | – | D6045 | G-7 | – |
| D6002 | C-4 | – | D6046 | A-4 | – |
| D6003 | I-3 | – | D6047 | B-4 | – |
| D6004 | E-4 | – | D6050 | B-7 | – |
| D6005 | J-6 | – | D6054 | B-4 | – |
| D6006 | G-4 | – | D6055 | B-5 | – |
| D6007 | I-9 | – | D6056 | B-5 | – |
| D6008 | I-8 | – | D6058 | B-3 | – |
| D6009 | I-8 | – | D6064 | B-5 | – |
| D6010 | H-8 | – | D6065 | B-4 | – |
| D6011 | G-6 | – | D6066 | A-6 | – |
| D6012 | G-6 | – | D6067 | B-4 | – |
| D6013 | G-5 | – | D6070 | G-7 | – |
| D6014 | G-5 | – | D6100 | E-6 | – |
| D6015 | I-9 | – | D6105 | D-6 | – |
| D6016 | I-8 | – | D6106 | E-9 | – |
| D6017 | H-8 | – | D6108 | F-9 | – |
| D6018 | H-8 | – | D6150 | B-4 | – |
| D6019 | G-6 | – | I C | | |
| D6020 | G-6 | – | IC6001 | B-1 | |
| D6021 | G-5 | – | IC6002 | E-6 | |
| D6022 | G-5 | – | IC6003 | G-8 | |
| D6023 | C-2 | – | TRANSISTOR | | * |
| D6024 | C-2 | – | Q6001 | J-9 | – |
| D6025 | B-2 | – | Q6002 | I-8 | – |
| D6026 | C-1 | – | Q6003 | H-6 | – |
| D6027 | B-1 | – | Q6004 | H-5 | – |
| D6028 | I-10 | – | Q6005 | A-4 | – |
| D6029 | I-10 | – | Q6008 | F-9 | – |
| D6030 | B-3 | – | Q6009 | C-3 | – |
| D6031 | H-12 | – | Q6011 | E-5 | – |
| D6032 | E-10 | – | Q6012 | E-9 | – |
| D6033 | F-9 | – | Q6013 | B-3 | – |
| D6035 | I-11 | – | Q6014 | D-5 | – |
| D6036 | A-2 | – | Q6015 | B-7 | – |
| D6037 | D-7 | – | Q6016 | B-2 | – |
| D6038 | A-5 | – | Q6018 | B-4 | – |
| D6039 | A-4 | – | Q6020 | B-5 | – |
| D6040 | F-10 | – | Q6021 | B-5 | – |
| D6041 | E-7 | – | Q6022 | A-6 | – |
| D6042 | D-8 | – | Q6101 | C-4 | – |
| D6043 | B-4 | – | Q6102 | B-2 | – |

– G BOARD –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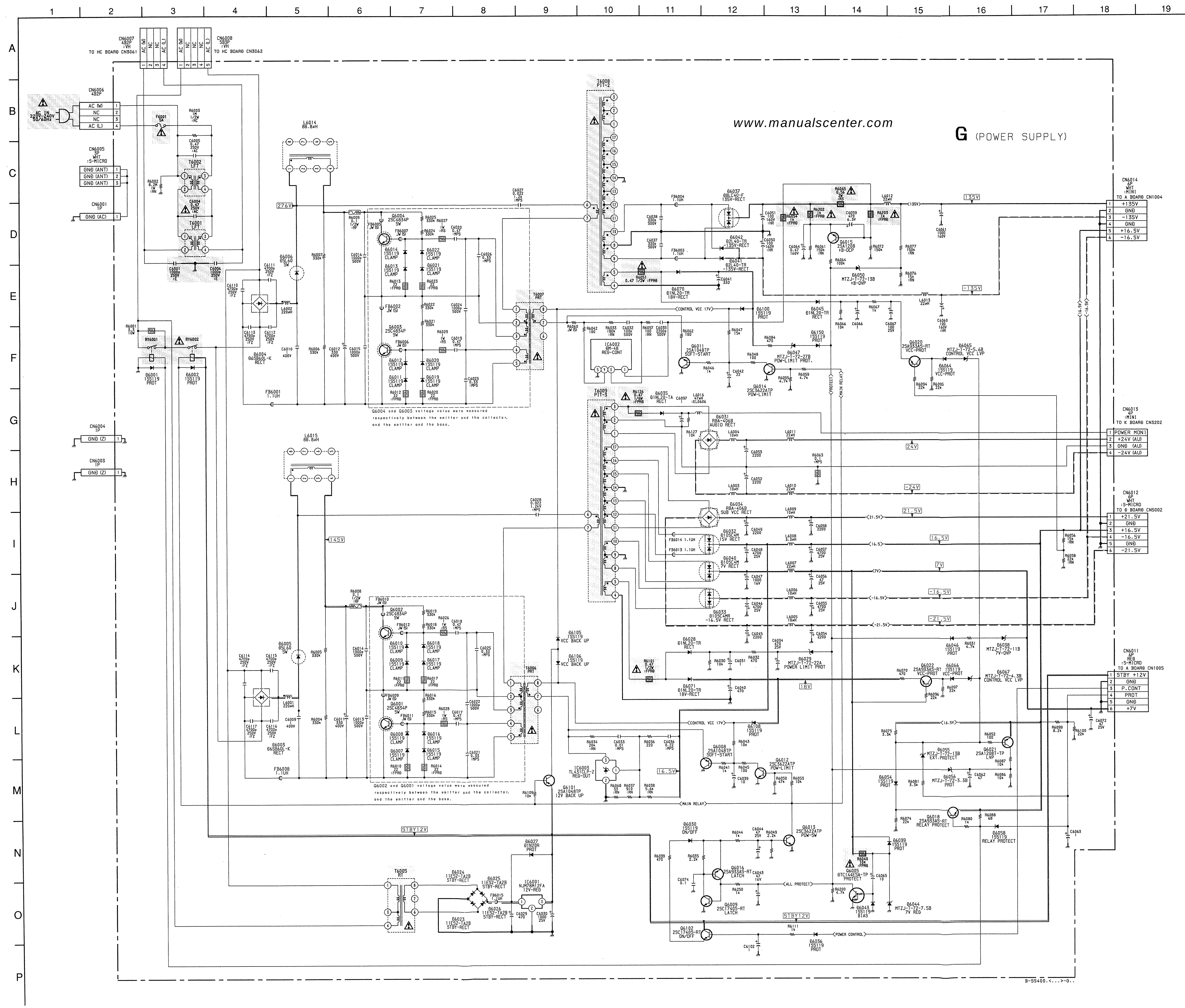
12
A
B
C
D
E
F
G
H
I
J
CN6011
CN6004
CN6003
CN6012
CN6013
CN6014
CN6008
CN6007
CN6001
CN6005
CN6006
IC6001
IC6002
IC6003
T6005
T6001
T6002
T6007
T6008
T6006
RY6001
RY6002
F6001
T5.0AH
SONY
1-657-656-14
+135V
-135V
+16.5V -16.5V
TP6001
TP6002
HOT
COLD
AC (N)
AC (L)


G (POWER SUPPLY)
CN6007 4P :VH TO HC BOARD CN3061
CN6008 5P :VH TO HC BOARD CN3062
CN6006 4P
AC IN 220V-240V 50/60Hz
AC (W)
NC
NC
AC (L)
CN6005 3P WHT :S-MICRO
GND (ANT)
GND (ANT)
GND (ANT)
CN6001 1P
GND (AC)
CN6004 1P
GND (Z)
CN6003 1P
GND (Z)
F6001 5A
T6002 LFT
T6001 LFT
RY6001
RY6002
D6001 1SS119 PROT
D6002 1SS119 PROT
D6004 D6SB60L-K RECT
D6003 D6SB60L-K RECT
L6014 88.8μH
L6015 88.8μH
D6006 D5L60 SW
D6005 D5L60 SW
Q6004 2SC4834P SW
Q6003 2SC4834P SW
Q6002 2SC4834P SW
Q6001 2SC4834P SW
T6007 PRT
T6006 PRT
T6008 PIT-2
T6009 PIT-3
T6005 RT
IC6001 NJM78M12FA 12V-REG
IC6002 BM-48 REG-CONT
IC6003 TL431CLP-Z REG-OUT
Q6004 and Q6003 voltage value were measured respectively between the emitter and the collector, and the emitter and the base.
Q6002 and Q6001 voltage value were measured respectively between the emitter and the collector, and the emitter and the base.
276V
145V
135V
-135V
24V
-24V
21.5V
16.5V
7V
-16.5V
-21.5V
18V
16.5V
STBY12V
CONTROL VCC 17V
MAIN RELAY
ALL PROTECT
POWER CONTROL
CN6014 6P WHT :MINI TO A BOARD CN1004
+135V
GND
-135V
GND
+16.5V
-16.5V
CN6013 4P :MINI TO K BOARD CN3202
POWER MONI
+24V (AU)
GND (AU)
-24V (AU)
CN6012 6P WHT :S-MICRO TO B BOARD CN5002
+21.5V
GND
+16.5V
-16.5V
GND
-21.5V
CN6011 6P RED :S-MICRO TO A BOARD CN1005
STBY +12V
GND
P.CONT
PROT
GND
+7V
D6037 D8LC40-F 135V-RECT
Q6015 2SA1208 +B-OCP
D6050 MTZJ-T-72-13B +B-OVP
D6070 D1NL20-TR 18V-RECT
D6100 1SS119 PROT
D6045 D1NL20-TR RECT
Q6011 2SA1048TP SOFT-START
Q6014 2SC5622A TP POW-LIMIT
D6047 MTZJ-T-72-27B POW-LIMIT PROT.
Q6020 2SA933AS-RT VCC-PROT
D6065 MTZJ-T-72-5.6B CONTROL VCC LVP
D6031 RBA-406B AUDIO RECT
D6034 RBA-406B SUB VCC RECT
D6032 D10SC4M 15V RECT
D6040 D10SC4M 7V RECT
D6033 D10SC4MR -16.5V RECT
D6105 1SS119 VCC BACK UP
D6106 1SS119 VCC BACK UP
D6028 D1NL20-TR RECT
D6029 MTZJ-T-72-22A POWER LIMIT PROT
D6071 D1NL20-TR 18V-RECT
Q6022 2SA933AS-RT VCC-PROT
D6066 1SS119 VCC-PROT
D6038 MTZJ-T-72-11B 7V-OVP
D6067 MTZJ-T-72-4.3B CONTROL VCC LVP
D6108 1SS119 PROT
Q6008 2SA1048TP SOFT-START
Q6012 2SC5622ATP POW-LIMIT
Q6101 2SA1048TP 12V BACK UP
Q6021 2SA1208T-TP LVP
D6055 MTZJ-T-72-13B EXT.PROTECT
D6056 MTZJ-T-72-3.3B PROT
D6054 1SS119 PROT
Q6018 2SA933AS-RT RELAY PROTECT
D6058 1SS119 RELAY PROTECT
D6030 1SS119 ON/OFF
Q6013 2SC5622ATP POW-SW
Q6016 2SA933AS-RT LATCH
Q6009 2SC1740S-RT LATCH
Q6005 DTC144ESA-TP PROTECT
D6039 1SS119 PROT
D6043 1SS119 BIAS
D6044 MTZJ-T-72-7.5B 7V REG
Q6102 2SC1740S-RT ON/OFF
D6036 1SS119 PROT
D6027 D1N20R PROT
D6024 11ES2-TA2B STBY-RECT
D6025 11ES2-TA2B STBY-RECT
D6026 11ES2-TA2B STBY-RECT
D6023 11ES2-TA2B STBY-RECT
B-SS400.<...>-0..

## G BOARD TRANSISTOR VOLTAGE LIST

| | B | C | E |
|---|---|---|---|
| Q6001 | -2.0 | 144.8 | 0 |
| Q6002 | 143.1 | 284.8 | 145.5 |
| Q6003 | -1.6 | 141.5 | 0 |
| Q6004 | 139 | 276.6 | 140.0 |
| Q6005 | 0.2 | 0 | GND |
| Q6008 | 15.9 | GND | 14.1 |
| Q6009 | 0.7 | 2.5 | GND |
| Q6011 | 14.8 | GND | 13.2 |
| Q6012 | 0 | 16.1 | GND |
| Q6013 | 0.8 | 0.1 | GND |
| Q6014 | 0 | 15.0 | GND |
| Q6015 | 134.8 | 0.2 | 135.2 |
| Q6016 | 2.5 | 0.7 | 2.5 |
| Q6018 | 16.2 | 16.9 | 16.9 |
| Q6020 | 15.1 | 15.6 | 15.7 |
| Q6021 | 16.9 | 0 | 16.9 |
| Q6022 | 15.3 | 16.0 | 16.0 |
| Q6101 | 11.1 | 11.8 | 11.8 |
| Q6102 | 4.7 | 11.8 | 4.1 |

All voltages are in V.

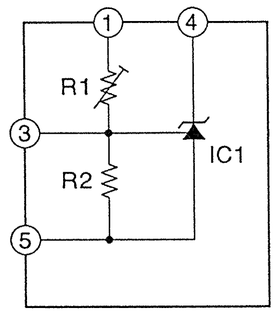
## G BOARD IC VOLTAGE LIST

| | Pin | Voltages |
|---|---|---|
| IC6001 | 1 | 14.4 |
| | 2 | GND |
| | 3 | 11.8 |
| IC6002 | 1 | 135.9 |
| | 2 | – |
| | 3 | 0.3 |
| | 4 | 0.3 |
| | 5 | GND |
| IC6003 | 1 | 2.5 |
| | 2 | GND |
| | 3 | 14.3 |

All voltages are in V.

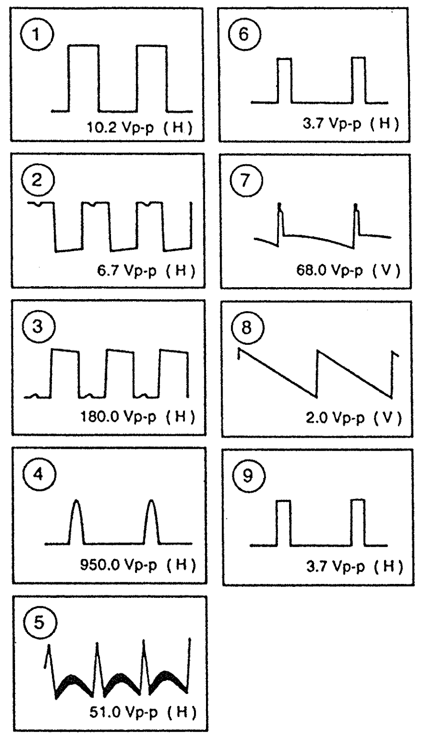
–: Blank Pin

## G BOARD : IC6002 DM-48


1
4
R1
3
IC1
R2
5

Schematic diagrams
← G board A board →

## • A BOARD WAVEFORMS



## A BOARD TRANSISTORE VOLTAGE LIST

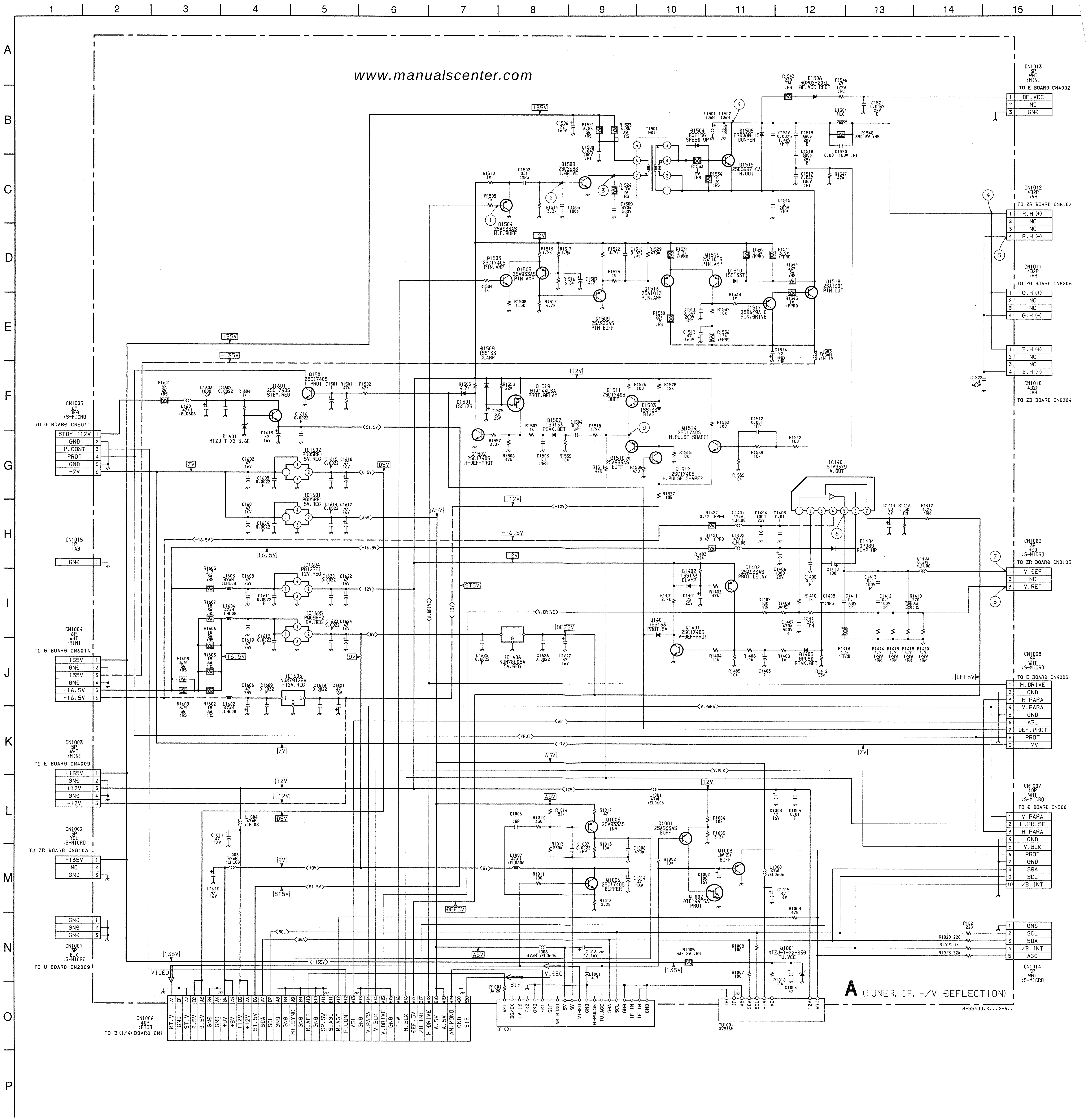
| | B | C | E |
|---|---|---|---|
| Q1001 | 4.0 | 0 | 2.9 |
| Q1002 | 0 | 0 | GND |
| Q1003 | 4.0 | GND | 4.6 |
| Q1005 | 4.6 | 0.8 | 4.9 |
| Q1006 | 4.6 | 8.7 | 4.0 |
| Q1401 | 0.7 | 0.1 | GND |
| Q1402 | 12.3 | 2.4 | 12.3 |
| Q1501 | 0 | 0 | GND |
| Q1502 | 0.7 | 0.1 | GND |
| Q1503 | 2.4 | 10.4 | 1.8 |
| Q1504 | 3.9 | GND | 4.6 |
| Q1505 | 9.8 | 2.3 | 10.4 |
| Q1508 | -2.9 | 88.3 | GND |
| Q1509 | 2.3 | GND | 3.0 |
| Q1510 | 0.3 | GND | 0.9 |
| Q1511 | 1.5 | 12.3 | 0.9 |
| Q1512 | 0 | 0.3 | 0 |
| Q1513 | 2.9 | -65.8 | 3.5 |
| Q1514 | 0 | 12.3 | 0 |
| Q1515 | -122.7 | 1.1 | -122.4 |
| Q1516 | 3.0 | -114.4 | 3.5 |
| Q1517 | -114.3 | -137.1 | -118.0 |
| Q1518 | -116.7 | -137.1 | -122.4 |
| Q1519 | 12.3 | 0.8 | 12.3 |
| Q1601 | 5.9 | 10.3 | 5.0 |

All voltages are in V.

## A BOARD IC VOLTAGES LIST

| | Pin | Voltages |
|---|---|---|
| IC1401 | 1 | 1.1 |
| | 2 | 16.5 |
| | 3 | -15.6 |
| | 4 | -17.2 |
| | 5 | 0.7 |
| | 6 | 16.2 |
| | 7 | 1.2 |
| IC1601 | 1 | 8.3 |
| | 2 | 5.0 |
| | 3 | GND |
| | 4 | 8.3 |
| IC1602 | 1 | 8.3 |
| | 2 | 5.0 |
| | 3 | GND |
| | 4 | 8.3 |
| IC1603 | I | -17.5 |
| | G | GND |
| | O | -12.0 |
| IC1604 | 1 | 15.6 |
| | 2 | 12.3 |
| | 3 | GND |
| | 4 | 15.6 |
| IC1605 | 1 | 12.2 |
| | 2 | 9.0 |
| | 3 | GND |
| | 4 | 12.2 |
| IC1606 | I | 9.0 |
| | G | GND |
| | O | 5.0 |

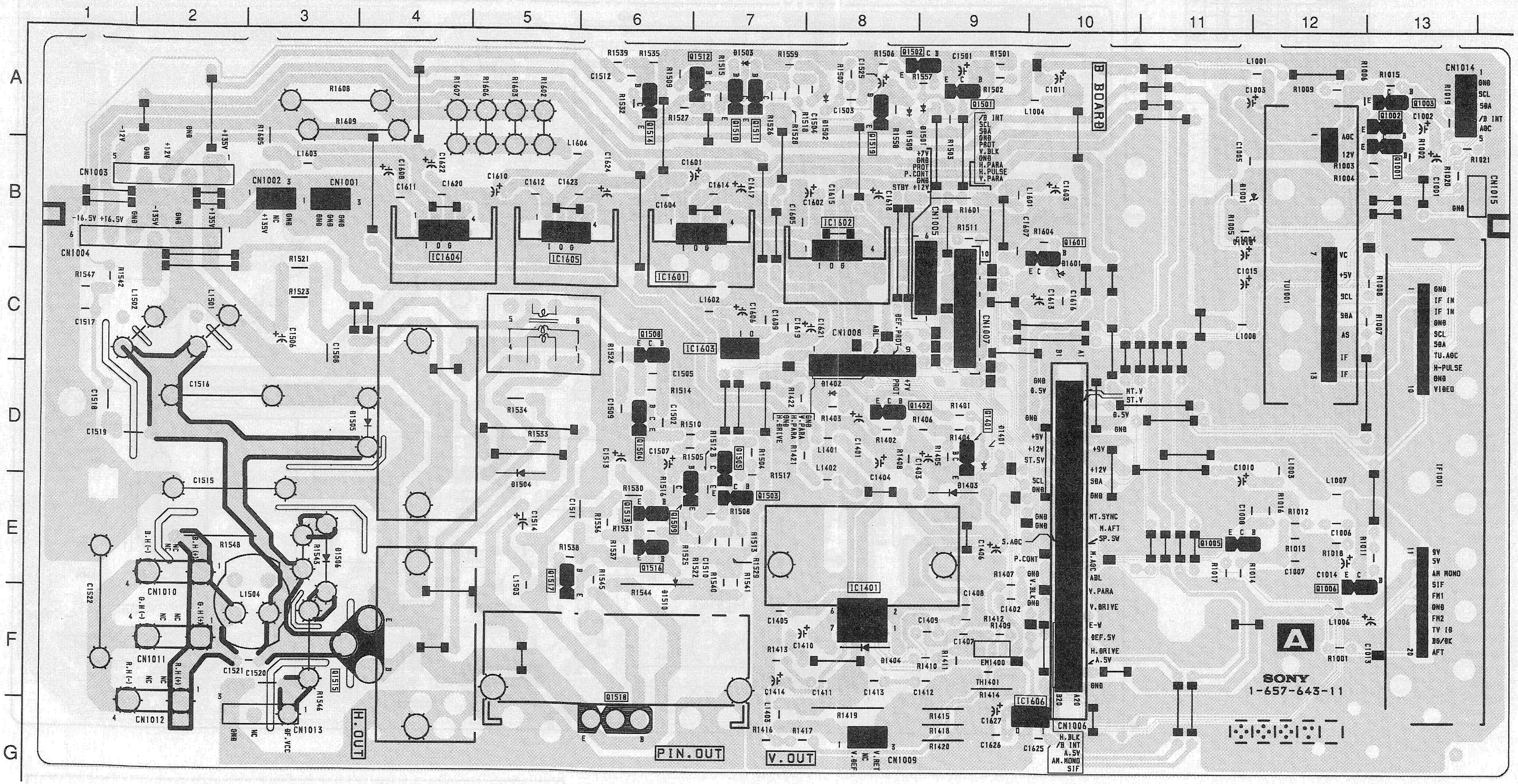
All voltages are in V.



A (TUNER, IF, H/V DEFLECTION)
B-SS400.<...>-A..
CN1013 3P WHT :MINI TO E BOARD CN4002
BF.VCC
NC
GND
CN1012 4B2P :VH TO ZR BOARD CN8107
R.H (+)
R.H (-)
CN1011 4B2P :VH TO ZG BOARD CN8206
G.H (+)
G.H (-)
B.H (+)
B.H (-)
CN1010 4B2P :VH TO ZB BOARD CN8304
CN1009 3P REG :S-MICRO TO ZR BOARD CN8105
V.DEF
V.RET
CN1008 9P REG :S-MICRO TO E BOARD CN4003
H.DRIVE
H.PARA
V.PARA
ABL
DEF.PROT
PROT
+7V
CN1007 10P WHT :S-MICRO TO G BOARD CN5001
H.PULSE
V.BLK
SDA
SCL
/B INT
AGC
CN1014 5P WHT :S-MICRO
CN1005 6P REG :S-MICRO TO G BOARD CN6011
STBY +12V
P.CONT
CN1015 1P :TAB
CN1004 6P WHT :MINI TO G BOARD CN6014
+135V
-135V
+16.5V
-16.5V
CN1003 5P WHT :MINI TO E BOARD CN4009
+12V
-12V
CN1002 3P YEL :S-MICRO TO ZR BOARD CN8103
CN1001 3P BLK :S-MICRO TO U BOARD CN2009
CN1006 40P :BTOB TO B (1/4) BOARD CN1
IF1001
TU1001 UV916H
T1501 HBT
Q1508 2SC2688 H.DRIVE
Q1515 2SC3997-CA H.OUT
Q1504 2SA933AS H.G.BUFF
D1505 ERB08M-15 DUMPER
D1504 RGP15G SPEED UP
D1506 RGP02-20EL BF.VCC RECT
Q1503 2SC1740S PIN.AMP
Q1505 2SA933AS PIN.AMP
Q1516 2SA1013 PIN.AMP
Q1513 2SA1013 PIN.AMP
Q1509 2SA933AS PIN.BUFF
Q1517 2SB649A-C PIN.DRIVE
Q1518 2SA1301 PIN.OUT
D1509 1SS133 CLAMP
Q1601 2SC1740S STBY.REG
Q1501 2SC1740S PROT
D1601 MTZJ-T-72-5.6C
Q1519 DTA144ESA PROT.DELAY
Q1511 2SC1740S BUFF
Q1502 2SC1740S H-DEF-PROT
D1502 1SS133 PEAK.DET
Q1510 2SA933AS BUFF
Q1512 2SC1740S H.PULSE SHAPE2
Q1514 2SC1740S H.PULSE SHAPE1
IC1401 STV9379 V.OUT
IC1602 PQ05RF1 5V.REG
IC1601 PQ05RF1 5V.REG
IC1604 PQ12RF1 12V.REG
IC1605 PQ09RF1 9V.REG
IC1603 NJM7912FA -12V.REG
IC1606 NJM78L05A 5V.REG
Q1402 2SA933AS PROT.DELAY
D1402 1SS133 CLAMP
D1404 GP08D RUMP UP
Q1401 2SC1740S V-DEF-PROT
D1401 1SS133 PROT.5V
D1403 GP08D PEAK.DET
Q1005 2SA933AS INV
Q1001 2SA933AS BUFF
Q1003 BUFF
Q1006 2SC1740S BUFFER
Q1002 DTC144ESA PROT
D1001 MTZJ-T-72-33D TU.VCC
135V
-135V
12V
-12V
7V
5V
A5V
16.5V
-16.5V
ST5V
DEF5V
9V
VIDEO
SIF

**A** [TUNER, IF, H/V DEFLECTION]

**– A BOARD –**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A
B
C
D
E
F
G
B BOARD
CN1003
CN1004
CN1002
CN1001
IC1604
IC1605
IC1601
IC1602
IC1603
CN1005
CN1007
CN1008
CN1006
CN1009
CN1010
CN1011
CN1012
CN1013
CN1014
CN1015
IC1401
IC1606
TU1001
IF1001
H.OUT
PIN.OUT
V.OUT
A
SONY
1-657-643-11

## A BOARD

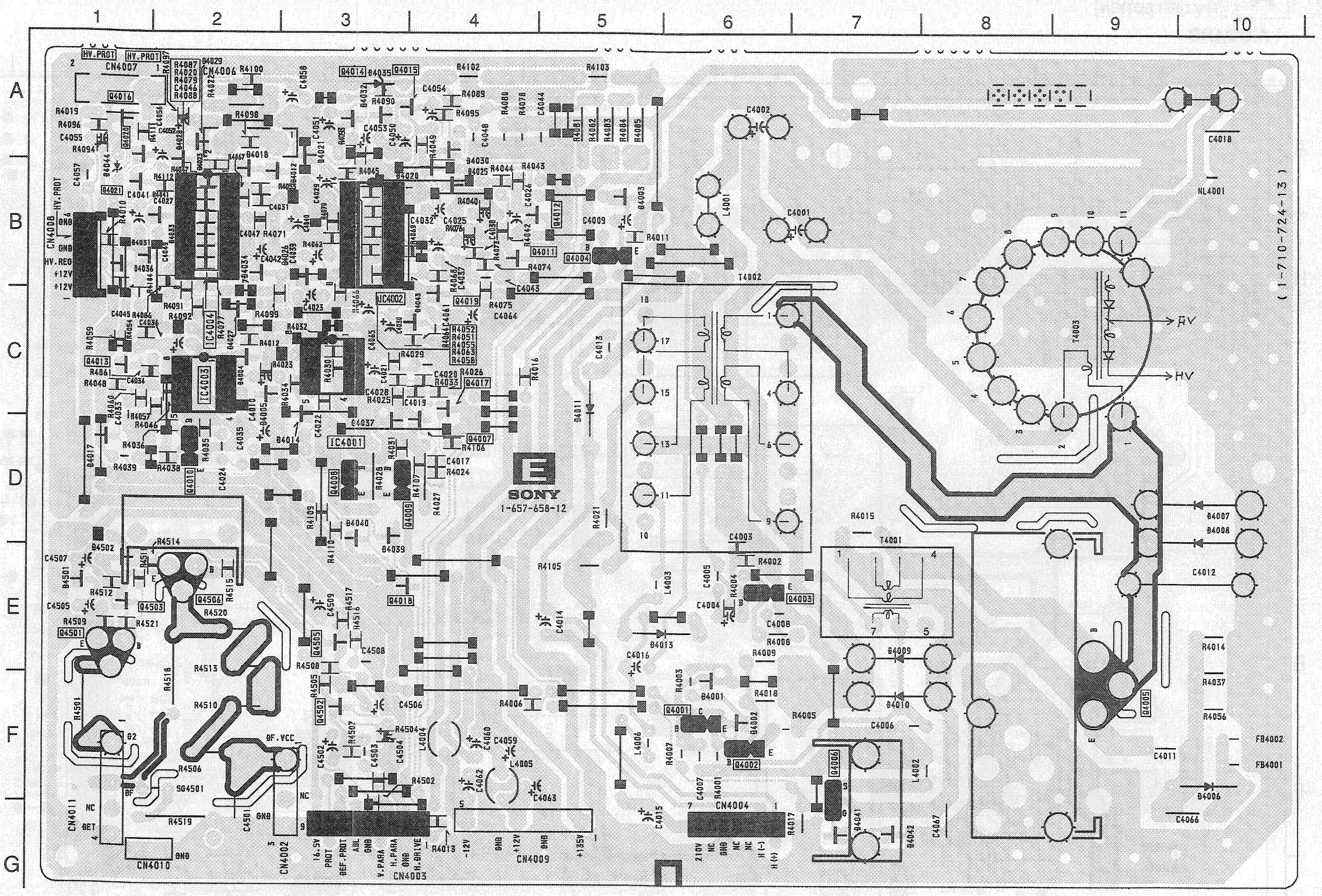
| DIODE | | * |
|---|---|---|
| D1001 | B-12 | – |
| D1401 | D-9 | – |
| D1402 | D-8 | – |
| D1403 | E-9 | – |
| D1404 | F-8 | – |
| D1501 | A-9 | – |
| D1502 | A-8 | – |
| D1503 | A-7 | – |
| D1504 | E-5 | – |
| D1505 | D-4 | – |
| D1506 | E-3 | – |
| D1509 | A-8 | – |
| D1510 | E-6 | – |
| D1601 | C-10 | – |
| **I C** | | |
| IC1401 | F-8 | |
| IC1601 | B-7 | |
| IC1602 | B-8 | |
| IC1603 | C-7 | |
| IC1604 | B-4 | |
| IC1605 | B-5 | |
| IC1606 | G-10 | |
| **TRANSISTOR** | | * |
| Q1001 | A-13 | – |
| Q1002 | A-13 | – |
| Q1003 | A-13 | – |
| Q1005 | E-11 | – |
| Q1006 | E-12 | – |
| Q1401 | D-9 | – |
| Q1402 | D-8 | – |
| Q1501 | A-9 | – |
| Q1502 | A-9 | – |
| Q1503 | E-7 | – |
| Q1504 | D-6 | – |
| Q1505 | D-7 | – |
| Q1508 | C-6 | – |
| Q1509 | E-6 | – |
| Q1510 | A-7 | – |
| Q1511 | A-7 | – |
| Q1512 | A-7 | – |
| Q1513 | E-6 | – |
| Q1514 | A-6 | – |
| Q1515 | F-4 | – |
| Q1516 | E-6 | – |
| Q1517 | E-5 | – |
| Q1518 | G-6 | – |
| Q1519 | A-8 | – |
| Q1601 | C-10 | – |

## E [HV-REGULATOR, DYNAMIC FOCUS]

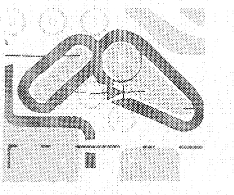
### – E BOARD –

### E BOARD

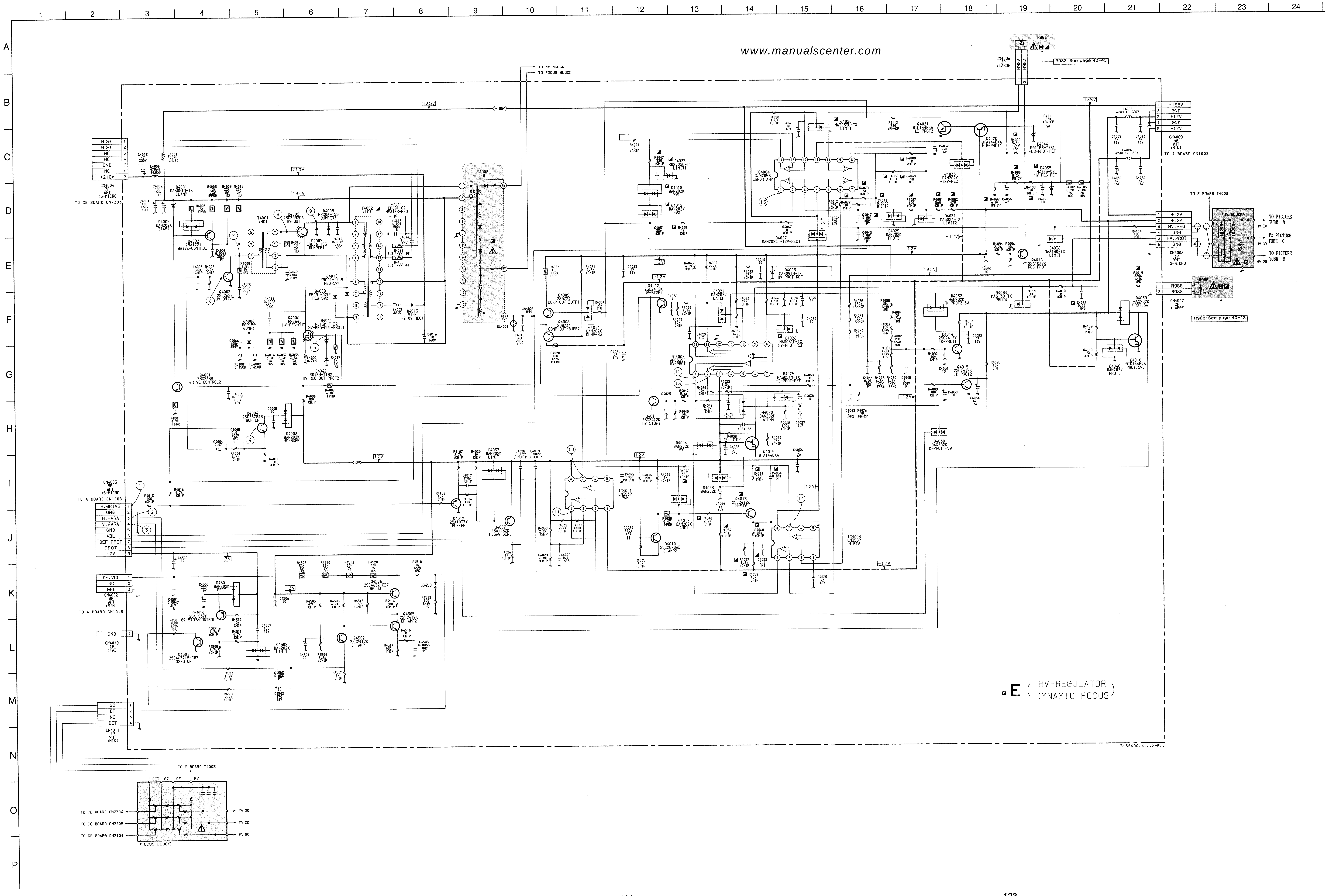
| DIODE | | * |
|---|---|---|
| D4001 | F-6 | ④ |
| D4002 | F-6 | ⑧ |
| D4003 | B-5 | ⑧ |
| D4004 | C-2 | ⑧ |
| D4005 | C-2 | ④ |
| D4006 | F-10 | – |
| D4007 | D-10 | – |
| D4008 | D-10 | – |
| D4009 | F-7 | – |
| D4010 | F-7 | – |
| D4011 | C-5 | – |
| D4012 | B-2 | ⑧ |
| D4013 | E-5 | ④ |
| D4014 | C-3 | ⑧ |
| D4017 | D-1 | ⑧ |
| D4018 | B-2 | ⑧ |
| D4020 | B-4 | ⑧ |
| D4021 | A-3 | ⑧ |
| D4023 | B-2 | ④ |
| D4025 | B-4 | ④ |
| D4026 | B-3 | ④ |
| D4027 | C-2 | ⑧ |
| D4028 | A-2 | ④ |
| D4029 | A-2 | ⑧ |
| D4030 | A-4 | ⑧ |
| D4031 | B-1 | ④ |
| D4032 | A-3 | ⑧ |
| D4033 | B-2 | ⑧ |
| D4034 | B-2 | ④ |
| D4035 | A-3 | – |
| D4036 | B-1 | ④ |
| D4037 | D-3 | ⑧ |
| D4039 | D-3 | ⑧ |
| D4040 | D-3 | ⑧ |
| D4041 | G-7 | ④ |
| D4042 | G-7 | ④ |
| D4043 | C-4 | ⑧ |
| D4044 | B-1 | – |
| D4501 | E-1 | ⑧ |
| D4502 | E-1 | ⑧ |
| **I C** | | |
| IC4001 | C-3 | |
| IC4002 | B-3 | |
| IC4003 | C-2 | |
| IC4004 | B-2 | |
| **TRANSISTOR** | | * |
| Q4001 | F-6 | – |
| Q4002 | F-6 | – |
| Q4003 | E-6 | – |
| Q4004 | B-5 | – |
| Q4005 | F-9 | – |
| Q4006 | F-7 | – |
| Q4007 | D-4 | ① |
| Q4008 | D-3 | – |
| Q4009 | D-3 | – |
| Q4010 | D-2 | – |
| Q4011 | B-4 | ① |
| Q4012 | B-4 | ① |
| Q4013 | C-1 | ① |
| Q4014 | A-2 | ① |
| Q4015 | A-4 | ① |
| Q4016 | A-1 | ① |
| Q4017 | C-4 | ① |
| Q4018 | E-3 | ① |
| Q4019 | C-4 | ① |
| Q4020 | A-1 | ① |
| Q4021 | B-1 | ① |
| Q4501 | E-1 | – |
| Q4502 | F-3 | ① |
| Q4503 | E-1 | ① |
| Q4505 | E-3 | ① |
| Q4506 | E-2 | – |



1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
HV.PROT
CN4007
CN4006
CN4008
GND
HV.REG
+12V
IC4001
IC4002
IC4003
IC4004
T4001
T4002
T4003
HV
L4001
L4002
L4003
L4004
L4005
NL4001
FB4001
FB4002
E
SONY
1-657-658-12
( 1-710-724-13 )
SBG4501
BF.VCC
G2
NC
CN4011
CN4010
CN4002
CN4003
CN4009
CN4004
16.5V
PROT
BEF.PROT
ABL
GND
V.PARA
H.PARA
H.DRIVE
-12V
+12V
+135V
210V

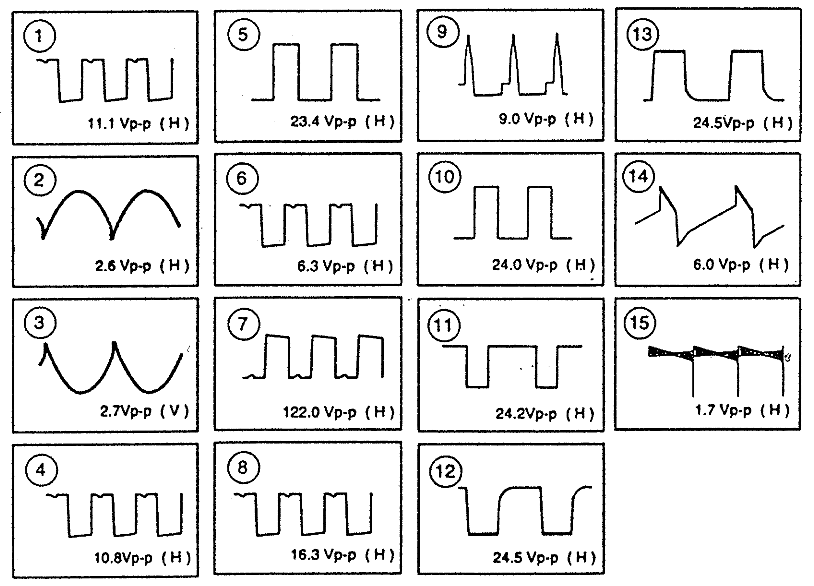


**NOTE:**
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.


H (+)
H (–)
NC
NC
GND
NC
+210V
CN4004 7P WHT :S-MICRO
TO CB BOARD CN7303
CN4003 9P WHT :S-MICRO
TO A BOARD CN1008
H.DRIVE
GND
H.PARA
V.PARA
GND
ABL
DEF.PROT
PROT
+7V
DF.VCC
NC
GND
CN4002 3P WHT :MINI
TO A BOARD CN1013
GND
CN4010 1P :TAB
G2
DF
NC
DET
CN4011 4P WHT :MINI
TO E BOARD T4003
DET
G2
DF
FV
TO CB BOARD CN7304
TO CG BOARD CN7205
TO CR BOARD CN7104
FV (B)
FV (G)
FV (R)
(FOCUS BLOCK)
TO HV BLOCK
TO FOCUS BLOCK
T4003 :FBT
T4002 :LDT
T4001 :HDT
CN4006 2P :LARGE
R983
R983:See page 40-43
+135V
GND
+12V
GND
-12V
CN4009 5P WHT :MINI
TO A BOARD CN1003
TO E BOARD T4003
+12V
+12V
HV.REG
GND
HV.PROT
GND
CN4008 6P WHT :S-MICRO
<HV.BLOCK>
HV (B)
HV (V)
HV (R)
TO PICTURE TUBE B
TO PICTURE TUBE G
TO PICTURE TUBE R
R988
R988
CN4007 2P :LARGE
R988:See page 40-43
IC4001 LM358P PWM
IC4002 μPC339C HV-PROT
IC4003 LM358P H.SAW
IC4004 NJM2058 ERROR AMP
B-SS400.<...>-E..

■E ( HV-REGULATOR DYNAMIC FOCUS )

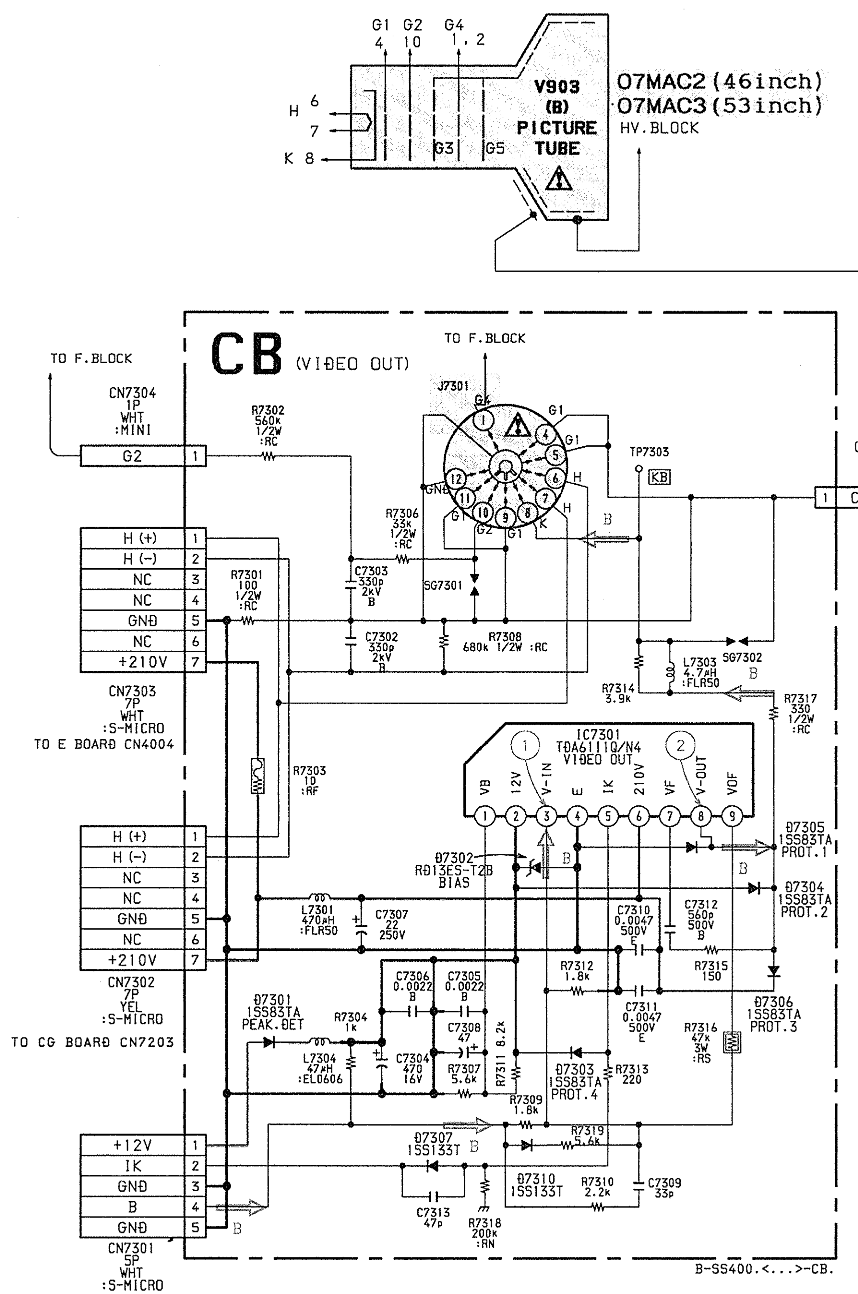
## • E BOARD WAVEFORMS



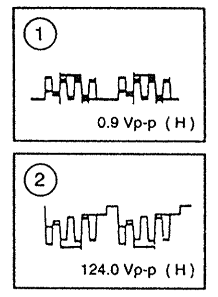
## E BOARD IC VOLTAGE LIST

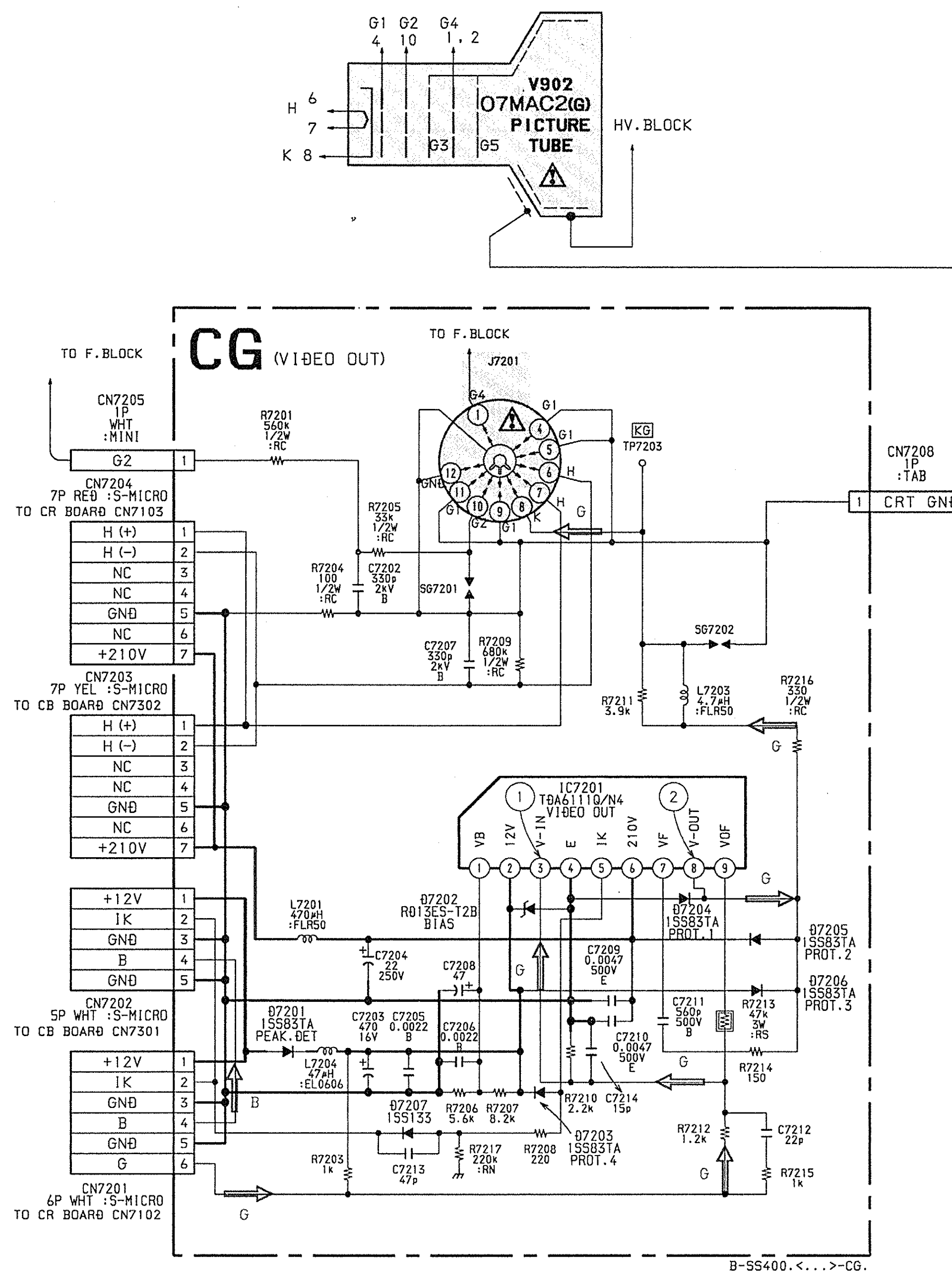
| | Pin | Voltages |
|---|---|---|
| IC4001 | 1 | 3.1 |
| | 2 | 7.3 |
| | 3 | 8.7 |
| | 4 | -12.0 |
| | 5 | 1.3 |
| | 6 | 2.1 |
| | 7 | 1.4 |
| | 8 | 12.3 |
| IC4002 | 1 | 0 |
| | 2 | 0 |
| | 3 | 12.3 |
| | 4 | 5.1 |
| | 5 | 4.7 |
| | 6 | 6.1 |
| | 7 | 0 |
| | 8 | 5.1 |
| | 9 | 4.8 |
| | 10 | 6.2 |
| | 11 | 0 |
| | 12 | GND |
| | 13 | 0.2 |
| | 14 | 0 |
| IC4003 | 1 | 0 |
| | 2 | 0 |
| | 3 | GND |
| | 4 | -12.0 |
| | 5 | GND |
| | 6 | 0.6 |
| | 7 | 1.6 |
| | 8 | 12.3 |
| IC4004 | 1 | 1.4 |
| | 2 | 1.4 |
| | 3 | 1.4 |
| | 4 | 11.6 |
| | 5 | 7.7 |
| | 6 | 7.7 |
| | 7 | 7.7 |
| | 8 | 1.4 |
| | 9 | 7.6 |
| | 10 | 7.6 |
| | 11 | -11.3 |
| | 12 | 3.3 |
| | 13 | 3.3 |
| | 14 | 3.3 |

All voltages are in V.

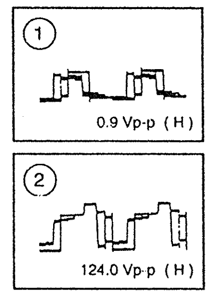

V903 (B) PICTURE TUBE
07MAC2 (46inch)
07MAC3 (53inch)
HV.BLOCK
CB (VIDEO OUT)
TO F.BLOCK
CN7304
CN7307
CRT GND
CN7303 7P WHT :S-MICRO TO E BOARD CN4004
CN7302 7P YEL :S-MICRO TO CG BOARD CN7203
CN7301 5P WHT :S-MICRO TO CG BOARD CN7202
IC7301 TDA6111Q/N4 VIDEO OUT
H (+)
H (-)
NC
GND
+210V
+12V
IK
B
B-SS400.<...>-CB.

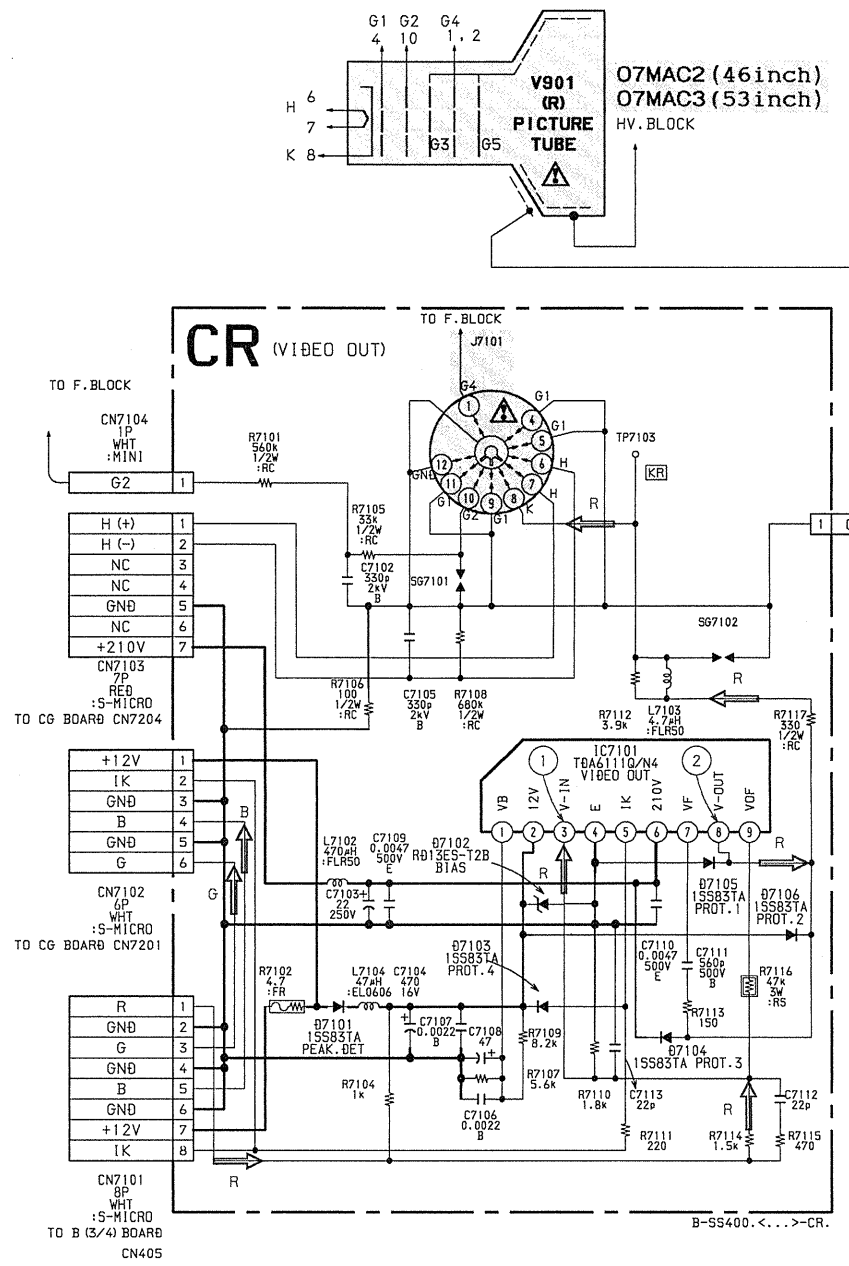
**• CB BOARD WAVEFORMS**



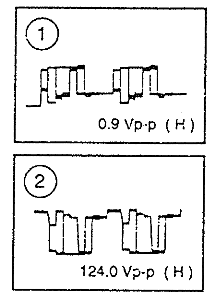

V902 (G) PICTURE TUBE
07MAC2(G)
HV.BLOCK
CG (VIDEO OUT)
TO F.BLOCK
CN7205
CN7208
CRT GND
CN7204 7P REG :S-MICRO TO CR BOARD CN7103
CN7203 7P YEL :S-MICRO TO CB BOARD CN7302
CN7202 5P WHT :S-MICRO TO CB BOARD CN7301
CN7201 6P WHT :S-MICRO TO CR BOARD CN7102
IC7201 TDA6111Q/N4 VIDEO OUT
B-SS400.<...>-CG.

**• CG BOARD WAVEFORMS**




V901 (R) PICTURE TUBE
07MAC2 (46inch)
07MAC3 (53inch)
HV.BLOCK
CR (VIDEO OUT)
TO F.BLOCK
CN7104
CN7107
CRT GND
CN7103 7P REG :S-MICRO TO CG BOARD CN7204
CN7102 6P WHT :S-MICRO TO CG BOARD CN7201
CN7101 8P WHT TO B (3/4) BOARD CN405
IC7101 TDA6111Q/N4 VIDEO OUT
B-SS400.<...>-CR.

**• CR BOARD WAVEFORMS**



**CB BOARD IC VOLTAGE LIST**

| | Pin | Voltages |
|---|---|---|
| IC7301 | 1 | 4.5 |
| | 2 | 11.2 |
| | 3 | 4.1 |
| | 4 | GND |
| | 5 | 9.6 |
| | 6 | 210.3 |
| | 7 | 178.6 |
| | 8 | 178.9 |
| | 9 | 177.5 |

All voltages are in V.

**CG BOARD IC VOLTAGE LIST**

| | Pin | Voltages |
|---|---|---|
| IC7201 | 1 | 4.5 |
| | 2 | 11.2 |
| | 3 | 4.1 |
| | 4 | GND |
| | 5 | 9.6 |
| | 6 | 210.3 |
| | 7 | 178.6 |
| | 8 | 178.9 |
| | 9 | 177.5 |

All voltages are in V.

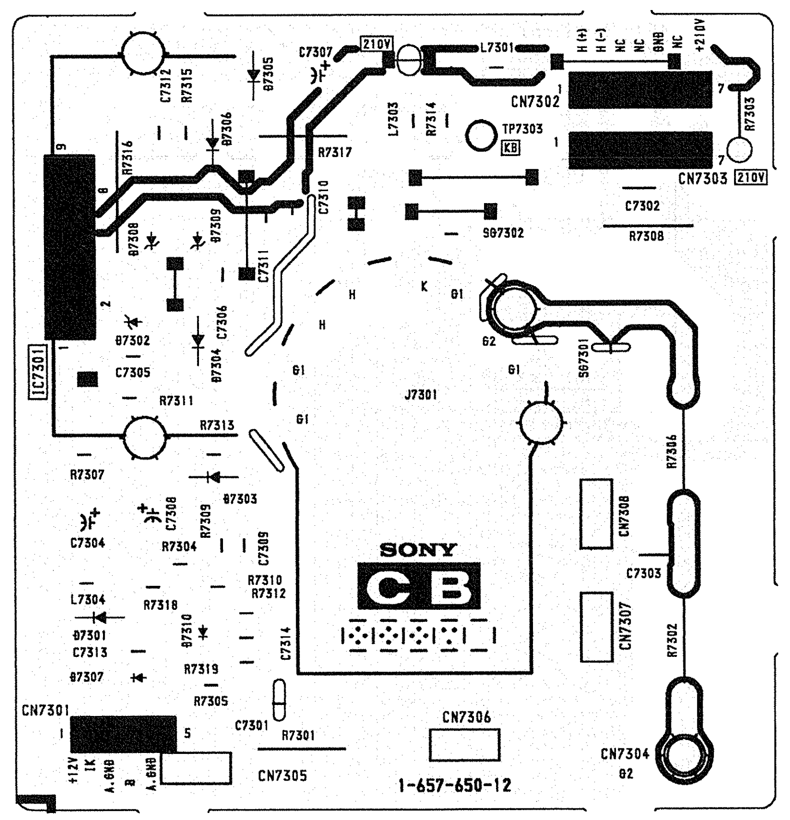
**CR BOARD IC VOLTAGE LIST**

| | Pin | Voltages |
|---|---|---|
| IC7101 | 1 | 4.5 |
| | 2 | 11.2 |
| | 3 | 4.1 |
| | 4 | GND |
| | 5 | 9.6 |
| | 6 | 210.3 |
| | 7 | 178.6 |
| | 8 | 178.9 |
| | 9 | 177.5 |

All voltages are in V.

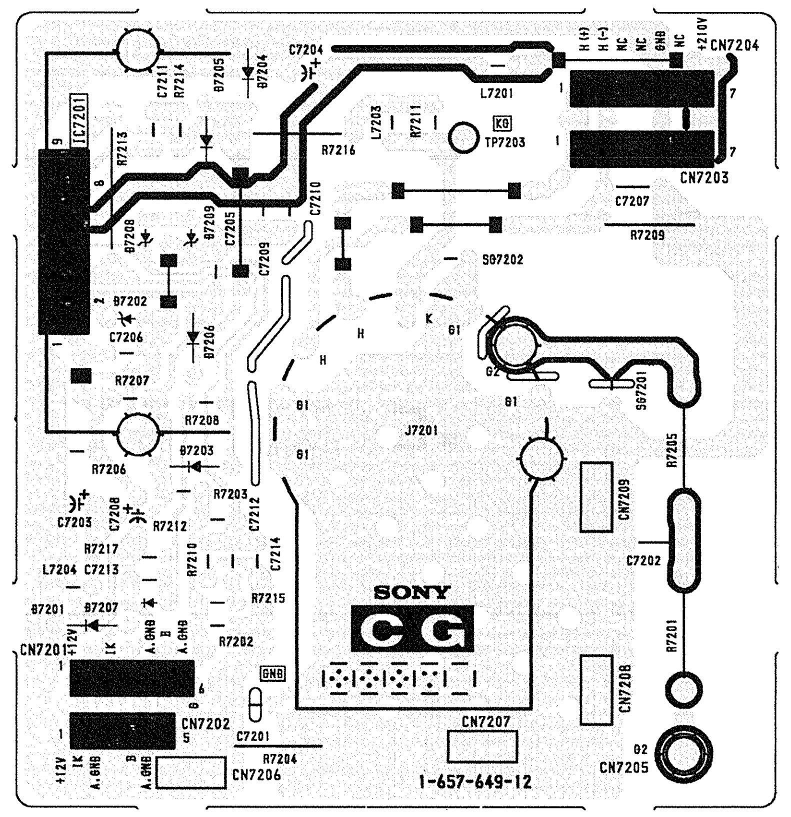
## CB [B OUT]

**– CB BOARD –**


SONY
CB
1-657-650-12
IC7301
CN7301
CN7302
CN7303
CN7304
CN7305
CN7306
CN7307
J7301
+210V
H (+)
H (-)
NC
GND

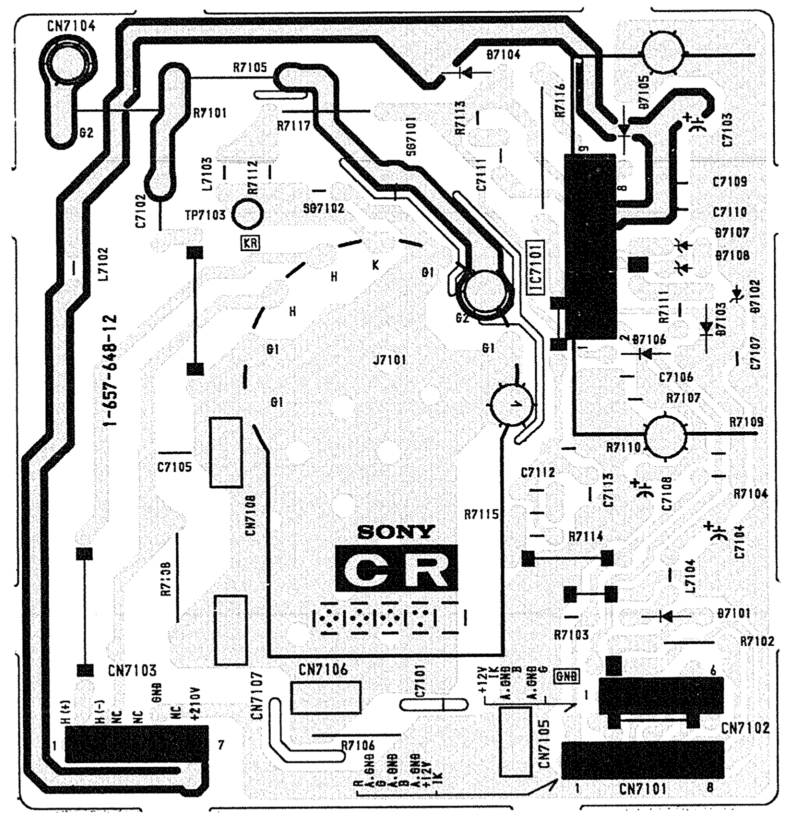
## CG [G OUT]

**– CG BOARD –**

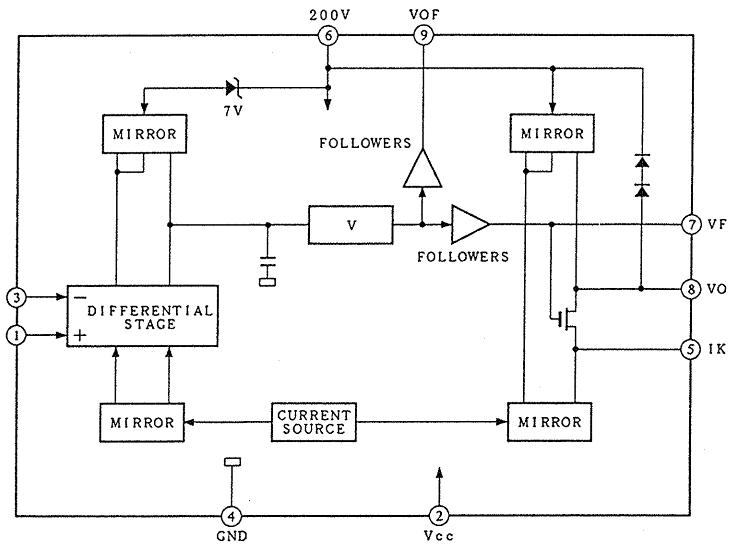

SONY
CG
1-657-649-12
IC7201
CN7201
CN7202
CN7203
CN7204
CN7205
CN7206
CN7207
J7201

## CR [R OUT]

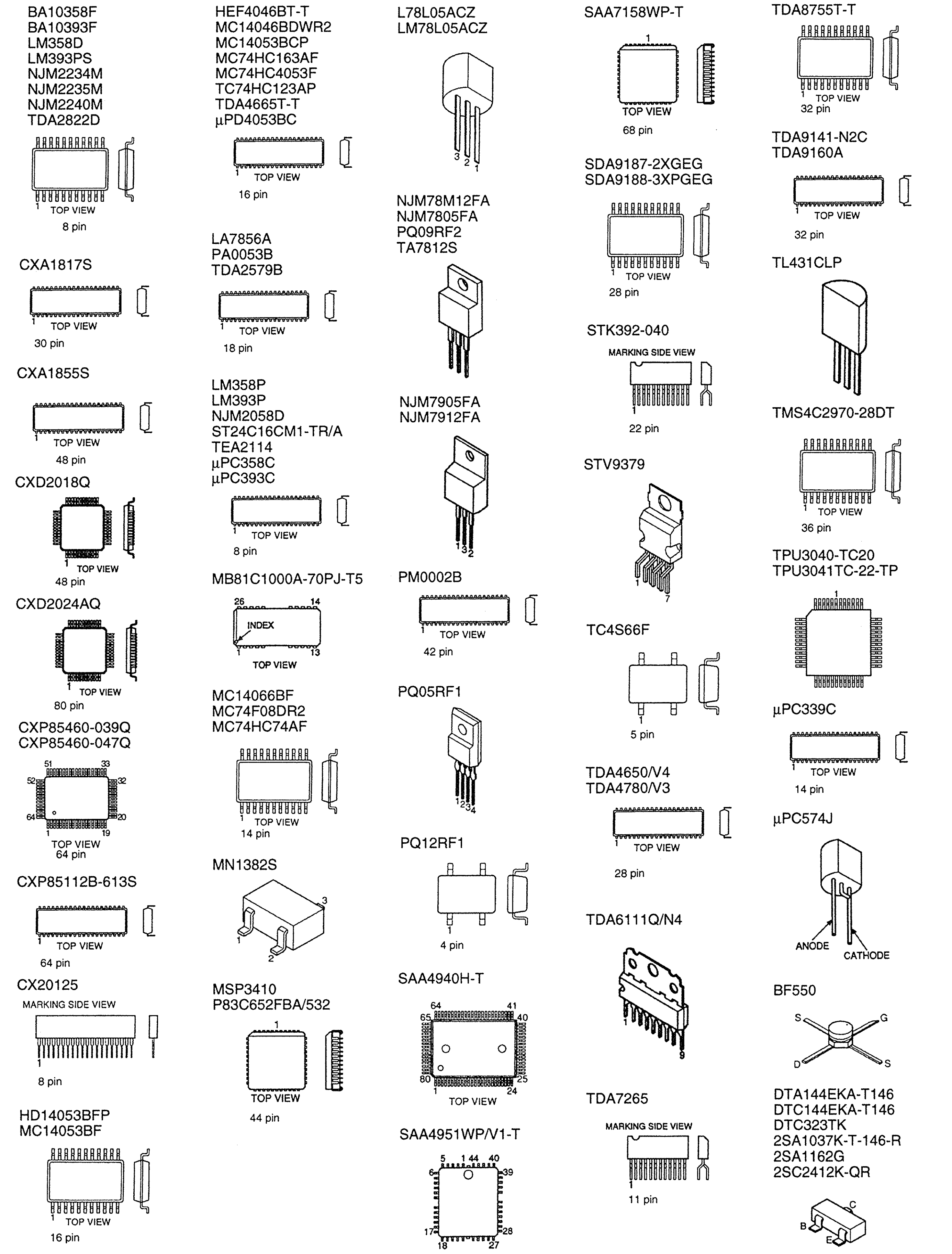
**– CR BOARD –**


SONY
CR
1-657-648-12
IC7101
CN7101
CN7102
CN7103
CN7104
CN7106
CN7107
J7101

**CB BOARD : IC7301 TDA6111Q/N4**
**CG BOARD : IC7201 TDA6111Q/N4**
**CR BOARD : IC7101 TDA6111Q/N4**


200V
VOF
7V
MIRROR
FOLLOWERS
V
FOLLOWERS
VF
VO
IK
VI
VB
DIFFERENTIAL STAGE
CURRENT SOURCE
MIRROR
MIRROR
MIRROR
GND
Vcc
①
②
③
④
⑤
⑥
⑦
⑧
⑨

## 6-5. SEMICONDUCTORS



BA10358F
BA10393F
LM358D
LM393PS
NJM2234M
NJM2235M
NJM2240M
TDA2822D
TOP VIEW
8 pin

CXA1817S
TOP VIEW
30 pin

CXA1855S
TOP VIEW
48 pin

CXD2018Q
TOP VIEW
48 pin

CXD2024AQ
TOP VIEW
80 pin

CXP85460-039Q
CXP85460-047Q
TOP VIEW
64 pin

CXP85112B-613S
TOP VIEW
64 pin

CX20125
MARKING SIDE VIEW
8 pin

HD14053BFP
MC14053BF
TOP VIEW
16 pin

HEF4046BT-T
MC14046BDWR2
MC14053BCP
MC74HC163AF
MC74HC4053F
TC74HC123AP
TDA4665T-T
µPD4053BC
TOP VIEW
16 pin

LA7856A
PA0053B
TDA2579B
TOP VIEW
18 pin

LM358P
LM393P
NJM2058D
ST24C16CM1-TR/A
TEA2114
µPC358C
µPC393C
TOP VIEW
8 pin

MB81C1000A-70PJ-T5
INDEX
TOP VIEW

MC14066BF
MC74F08DR2
MC74HC74AF
TOP VIEW
14 pin

MN1382S

MSP3410
P83C652FBA/532
TOP VIEW
44 pin

L78L05ACZ
LM78L05ACZ

NJM78M12FA
NJM7805FA
PQ09RF2
TA7812S

NJM7905FA
NJM7912FA

PM0002B
TOP VIEW
42 pin

PQ05RF1

PQ12RF1
4 pin

SAA4940H-T
TOP VIEW

SAA4951WP/V1-T

SAA7158WP-T
TOP VIEW
68 pin

SDA9187-2XGEG
SDA9188-3XPGEG
TOP VIEW
28 pin

STK392-040
MARKING SIDE VIEW
22 pin

STV9379

TC4S66F
5 pin

TDA4650/V4
TDA4780/V3
TOP VIEW
28 pin

TDA6111Q/N4

TDA7265
MARKING SIDE VIEW
11 pin

TDA8755T-T
TOP VIEW
32 pin

TDA9141-N2C
TDA9160A
TOP VIEW
32 pin

TL431CLP

TMS4C2970-28DT
TOP VIEW
36 pin

TPU3040-TC20
TPU3041TC-22-TP

µPC339C
TOP VIEW
14 pin

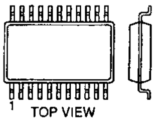
µPC574J
ANODE
CATHODE

BF550
S
G
D
S

DTA144EKA-T146
DTC144EKA-T146
DTC323TK
2SA1037K-T-146-R
2SA1162G
2SC2412K-QR
B
C
E

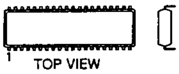
## 6-5. SEMICONDUCTORS

BA10358F
BA10393F
LM358D
LM393PS
NJM2234M
NJM2235M
NJM2240M
TDA2822D



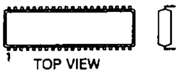
8 pin

CXA1817S



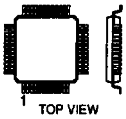
30 pin

CXA1855S



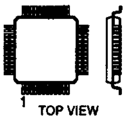
48 pin

CXD2018Q



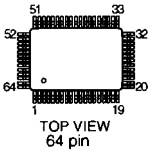
48 pin

CXD2024AQ



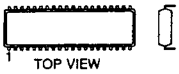
80 pin

CXP85460-039Q
CXP85460-047Q


51
33
52
32
64
20
1
19
TOP VIEW

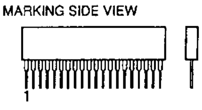
64 pin

CXP85112B-613S



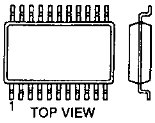
64 pin

CX20125


MARKING SIDE VIEW
1

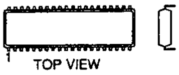
8 pin

HD14053BFP
MC14053BF



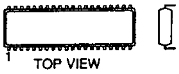
16 pin

HEF4046BT-T
MC14046BDWR2
MC14053BCP
MC74HC163AF
MC74HC4053F
TC74HC123AP
TDA4665T-T
µPD4053BC



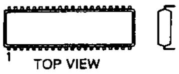
16 pin

LA7856A
PA0053B
TDA2579B



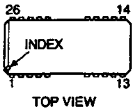
18 pin

LM358P
LM393P
NJM2058D
ST24C16CM1-TR/A
TEA2114
µPC358C
µPC393C

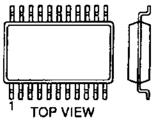


8 pin

MB81C1000A-70PJ-T5

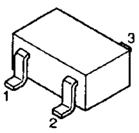

26
14
INDEX
1
13
TOP VIEW

MC14066BF
MC74F08DR2
MC74HC74AF

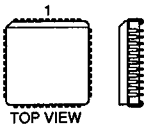


14 pin

MN1382S

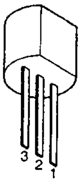


MSP3410
P83C652FBA/532

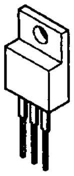


44 pin

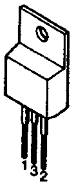
L78L05ACZ
LM78L05ACZ



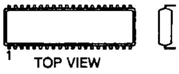
NJM78M12FA
NJM7805FA
PQ09RF2
TA7812S



NJM7905FA
NJM7912FA

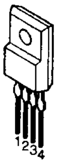


PM0002B

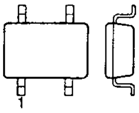


42 pin

PQ05RF1

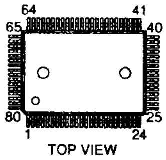


PQ12RF1



4 pin

SAA4940H-T


64
41
65
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80
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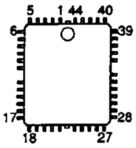
24
TOP VIEW

SAA4951WP/V1-T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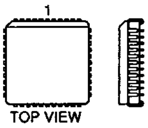
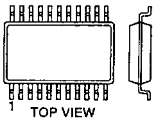
SAA7158WP-T



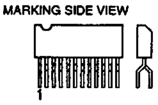
68 pin

SDA9187-2XGEG
SDA9188-3XPGEG



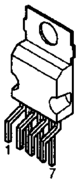
28 pin

STK392-040

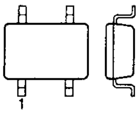

MARKING SIDE VIEW
1

22 pin

STV9379

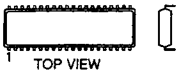


TC4S66F



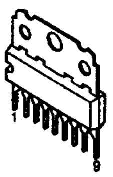
5 pin

TDA4650/V4
TDA4780/V3

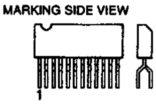


28 pin

TDA6111Q/N4

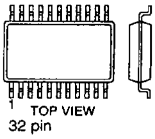


TDA7265


MARKING SIDE VIEW
1

11 pin

TDA8755T-T



32 pin

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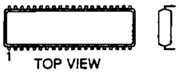
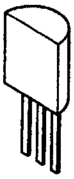
TDA9160A

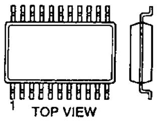


32 pin

TL431CLP

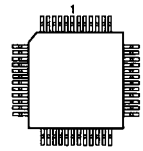


TMS4C2970-28DT

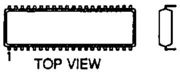


36 pin

TPU3040-TC20
TPU3041TC-22-TP

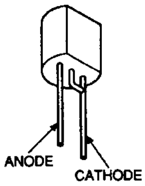


µPC339C



14 pin

µPC574J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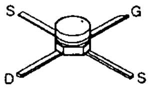
CATHODE

BF550



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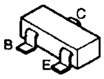
DTC144EKA-T146
DTC323TK
2SA1037K-T-146-R
2SA1162G
2SC2412K-QR



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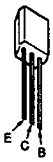
DTC144ESA-TP
2SC1740S-R
2SC3622A-LK



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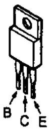

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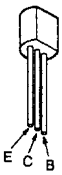
2SA1208
2SA1208S-TP



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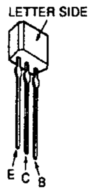
2SA1175-HFE
2SC2785-HFE


LETTER SIDE
E
C
B

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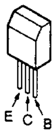
2SA1221-T-M
2SB733-34
2SB734-T-4
2SD774-34



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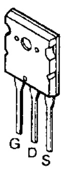

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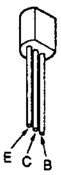
2SC2878-AB



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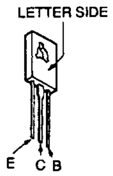
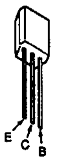
2SC2688-LK


LETTER SIDE
E
C
B

2SC1740S-R



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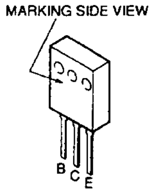
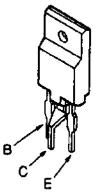

MARKING SIDE VIEW
B
C
E

2SC4632LS-CB7



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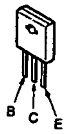

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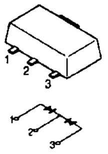
BBY40



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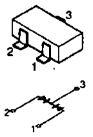

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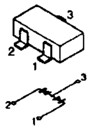

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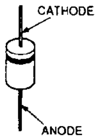
EGP20G
GP08
GP08DPKG23
HZT33-02
MTZ-T-72-22A
MTZ-T-72-33D
RD2.0SB-T1
RGP02-20EL-6394
RGP15GPKG23
1SS83


CATHODE
ANODE

D1N20R
MTZJ-11B
MTZJ-4.3B
MTZJ-5.6B
MTZJ-5.6C
MTZJ-T-72-13B
MTZJ-T-72-27B
MTZJ-T-72-3.3B
MTZJ-T-72-5.6B
MTZJ-T-72-7.5B
RD11ES-B1
RD13ES-B2
RD22ES-B1
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RD39ES-B2
RD4.3ES-B2
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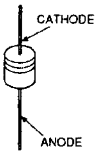
1SS119-25TG
1SS133
11ES2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ANODE

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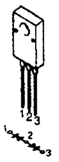

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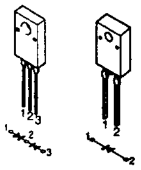
D8LC40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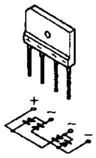
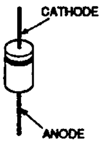


D2L40F
D2L40-TA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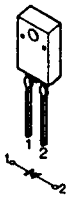

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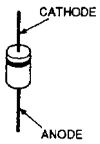
ERC91-02
S2LA20F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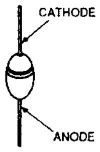
ERC38-06
V19E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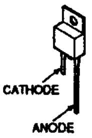
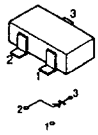
ANODE

ERD08M-15


CATHODE
ANODE

MA3024-TX
MA3033-L
MA3047-TX
MA3051M
MA3056M
MA3075M-TX
MA3091
MA3130
RD13M-B2
RD4.7M-B2
RD5.1M-B2
RD5.6M-B2
RD7.5M-B2



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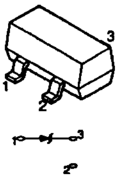
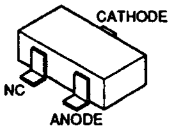


MA3240-TX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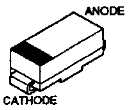
NC
ANODE

SC802-06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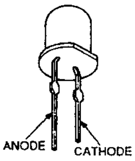
CATHODE

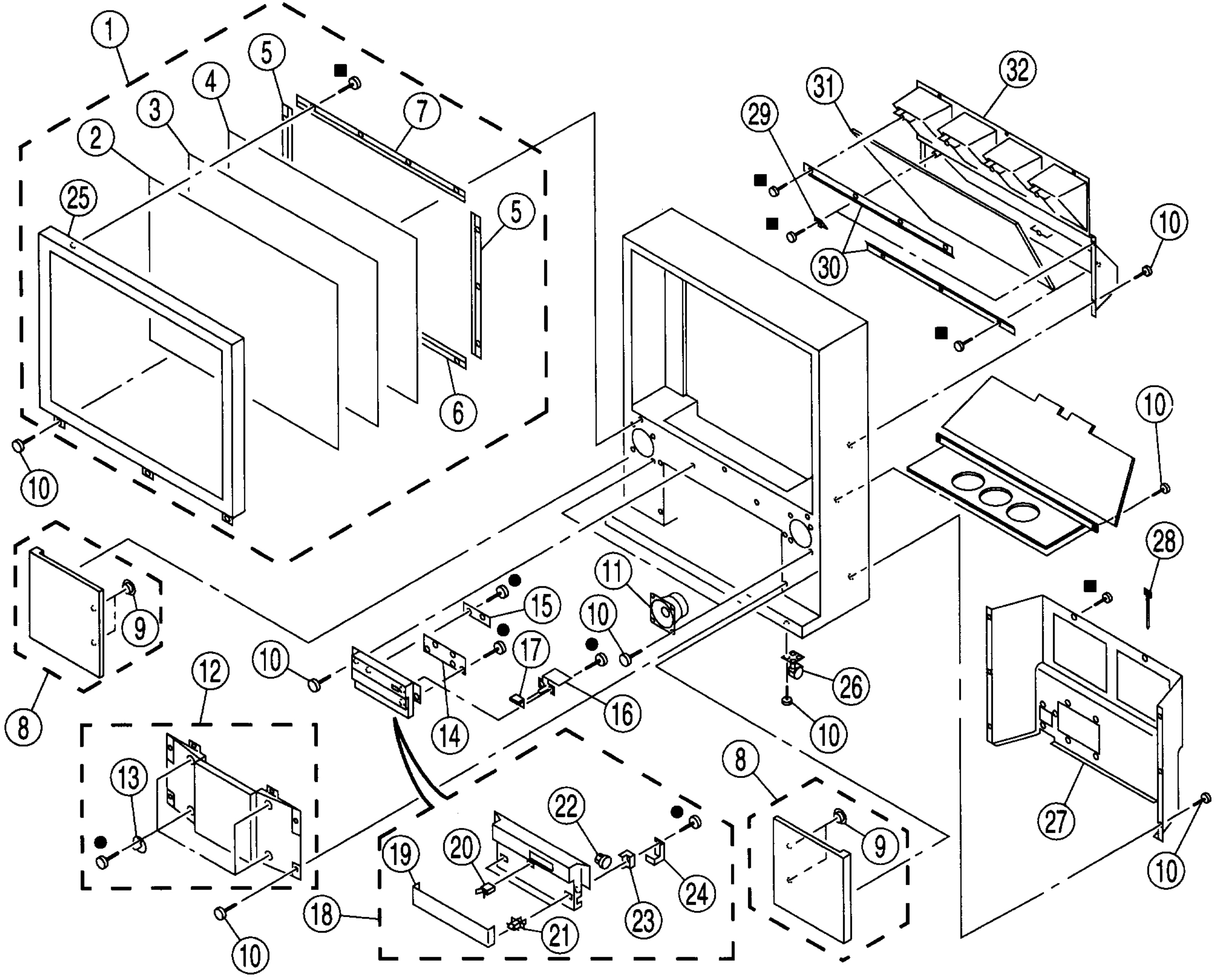
TLR124


ANODE
CATHODE

sont critiques pour la securite.
Ne les remplacer que par une
piece portant le numero specifie.

## 7-1. COVER (KP-46S4/46S4K/46S4U)

● : 7-685-648-79 +BVTP 3X12
■ : 7-685-663-79 +BVTP 4X16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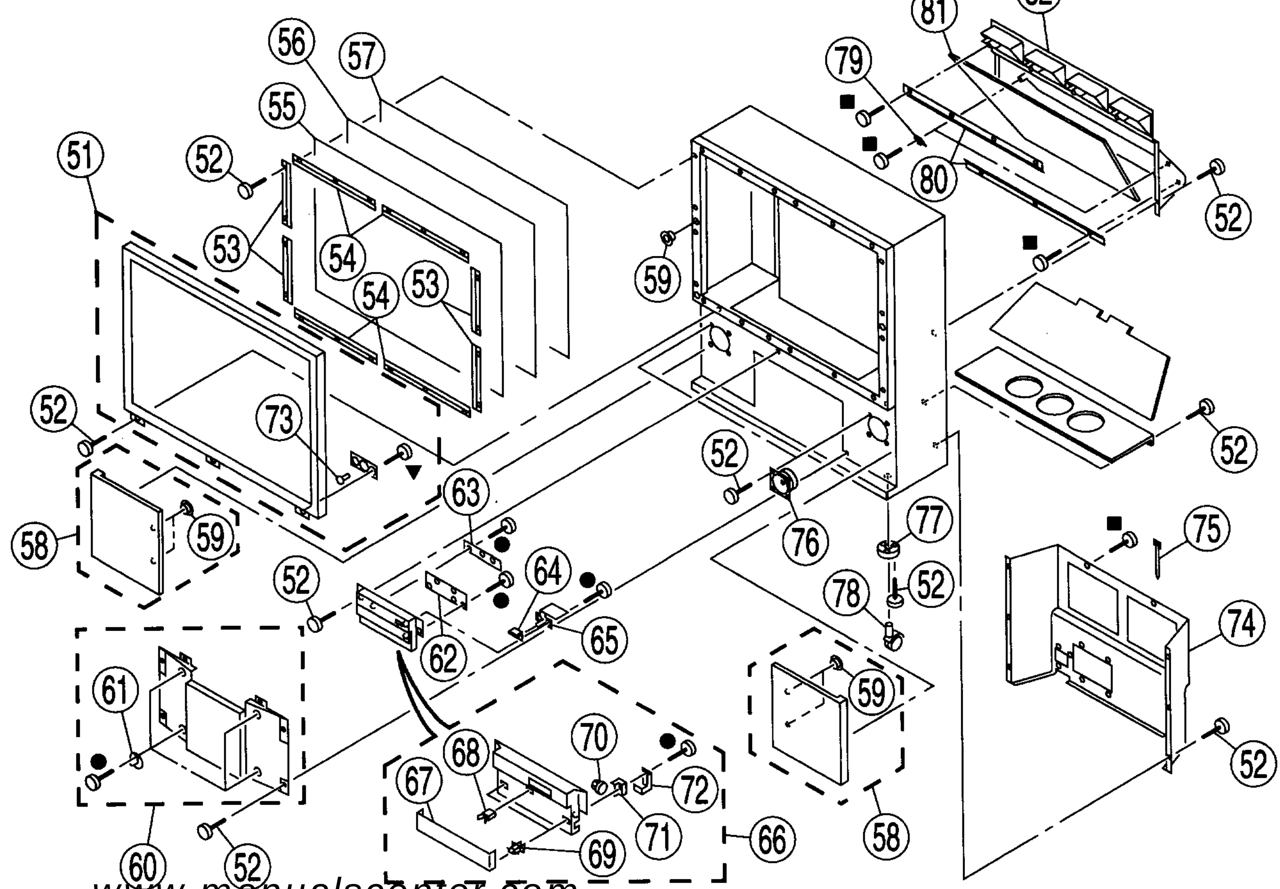
## 7-2. COVER (KP-53S4/53S4K/53S4U)

● : 7-685-648-79 +BVTP 3X12
■ : 7-685-663-79 +BVTP 4X16
▼ : 7-685-248-14 +KTP 3X12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66
58
60
52
■
●
▼

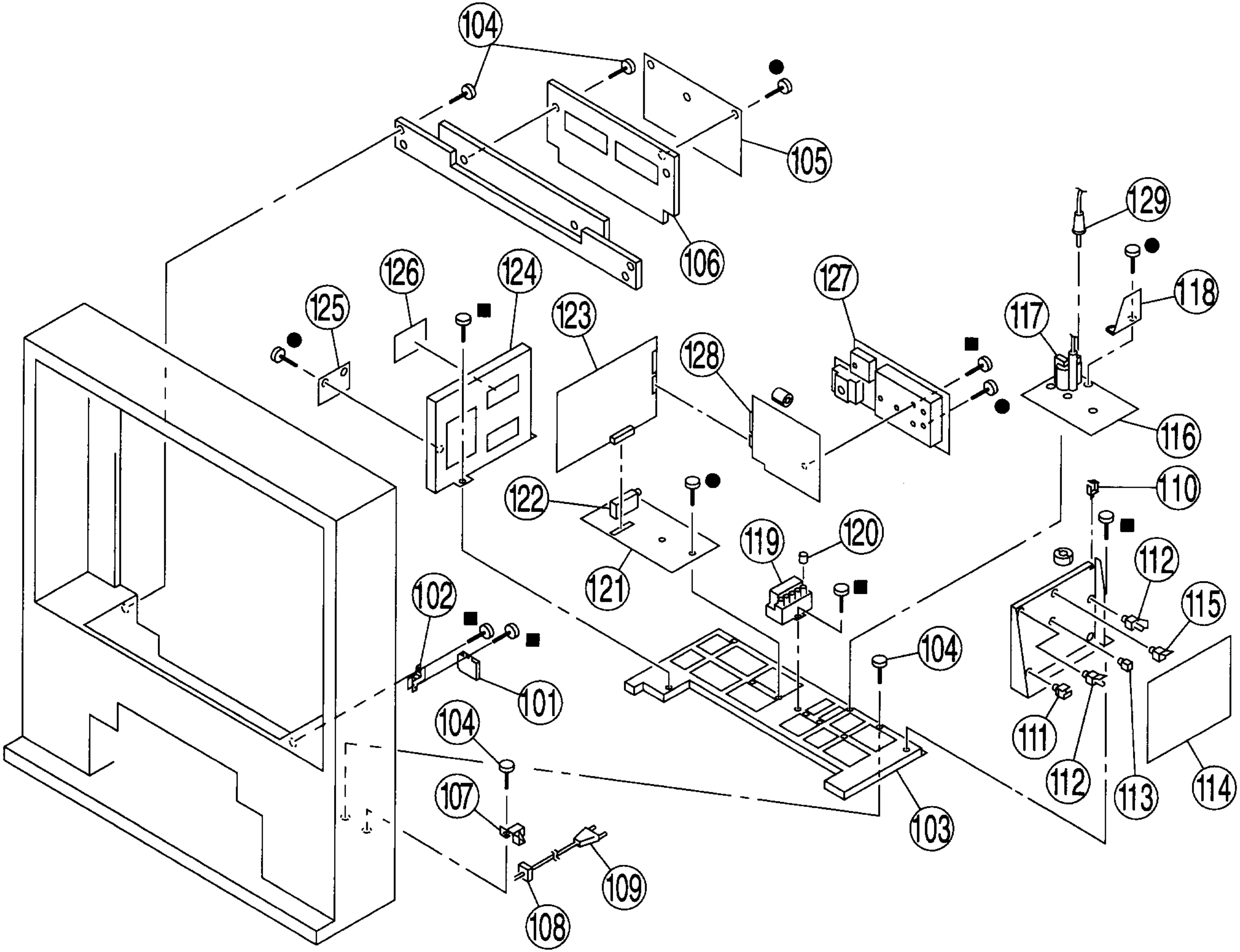
## 7-3. CHASSIS

● : 7-685-648-79 +BVTP 3X12

■ : 7-685-663-79 +BVTP 4X16

The componants identified by shading and mark ! are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ! sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.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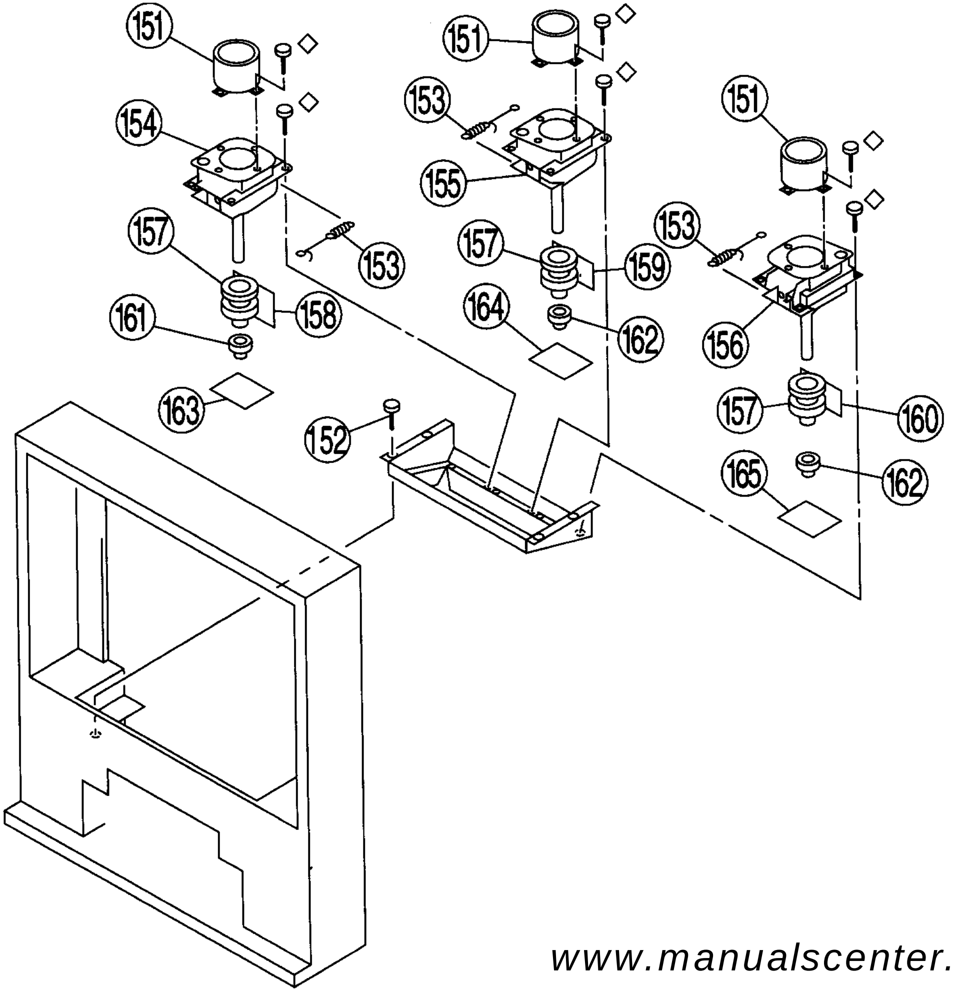
114

## 7-4. PICTURE TUBE

◇ : 7-685-663-71 +BVTP 4X16

The componants identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.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152
◇